Digital communications, social support and psychological well-being in adolescents

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Metadata Record: [https://dspace.lboro.ac.uk/2134/36009](https://dspace.lboro.ac.uk/2134/36009)

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Digital Communications, Social Support and Psychological Well-Being in Adolescents

By Ben Oldfield

A Doctoral Thesis

Submitted in partial fulfilment of the requirements for the award of Ph.D. of Loughborough University

July 2005

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Abstract

Concerns about potential adverse socio-psychological consequences have commonly accompanied the introduction of new communication media. These have often been focused on the effects of media on the younger and vulnerable sectors of society. The present research examines online text-based communications and the use of mobile phones specifically in terms of the role and function of SMS text messages by young people. The role of these media is conceived widely so as not to concentrate on any adverse influences but their use in the normal everyday social experiences of young people. Young people constitute a major sector of the consumers of these digital media.

Social support is conceived as an important function of text-based digital communications just as it has been demonstrated to be crucial to a great deal of socio-psychological functioning. In order to assess the impact of the digital media on psychological functioning, the concept of psychological well-being is employed to be indicative of the absence of significant levels of psychological problems such as stress, anxiety, loneliness and depression.

Four colleges in two different locations of the United Kingdom participated in the study. The total sample size was 443 young people in the age range 16-24 years. Patterns of Internet and SMS messaging use were assessed using a self-completion questionnaire. The main body of the questionnaire examined features of the Internet such as the locations of access, types of use and duration of use for a number of activities. Similar measures were also constructed for the use of SMS text messaging. Measures of psychological well-being (e.g. stress and loneliness) were adapted, modified and re-analysed to obtain the psychometrically
optimum scales for measuring the various factors identified. Psychological well-being was examined using the Depression, Anxiety and Stress Scale DASS21 (Lovibond & Lovibond, 1995) and the Revised UCLA Loneliness Scale (Russell et al., 1980). In addition these were combined in order to create an overall measure of psychological well-being for some analyses.

No convincing evidence was found to support the view that the digital text-based media have an adverse influence on the psychological well-being of users once appropriate statistical controls have been employed. Indeed, it was the case that those who failed to use text-based digital communications as a key part of their social activity were more likely to show poorer levels of psychological well-being. Thus the study failed to find support for the presence of harmful consequences from the use of these digital communications media. Since limited but somewhat consistent evidence of positive consequences of the use of text-based digital communications was found, the findings suggest that their use reflects another aspect of socially and psychologically well-integrated personalities.
Acknowledgements

First and foremost my deepest thanks must go to my supervisor Dr Dennis Howitt for all of his help, guidance and friendship throughout this thesis. His input, knowledge and patience have been invaluable in completing this work. I must also thank my family for their emotional (and financial) support throughout all of my studies. Without them none of this would have been possible. I would also like to thank Deidre Lombard for all of her help at various stages throughout this thesis. Her willingness to help has been very important to the completion of this work. I would also like to thank Dallam School 6th Form, De Lisle Catholic Science College, Lancaster and Morecambe College and Rawlins Community College for allowing me to distribute my questionnaires on their grounds. I also wish to thank deeply all the students from these colleges who kindly took part in this research.
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Chapter 1: Introduction to the New Digital Media

Overview

This chapter introduces the topic of the digital media and their integration into modern society. It presents the historical setting for the development of PC and mobile technologies as well as discussing current trends in the ownership and use of these media. It is argued that these digital communications media have become an integral part of everyday lives and that their usage is large-scale.

Introduction

Communication is the quintessential social activity. Society without communication is inconceivable. Language is central to speech and other forms of communication though a great deal may be communicated effectively without the use of language. However, technology and communications have been intertwined for thousands of years once tools were developed for writing, drawing and painting. The development of communications technology has been evident throughout history with a prime example being the written word. Printing allowed the first mass medium of communications to develop – books and eventually newspapers. For the most part, modern communications media have a history of less than 150 to 200 years and many much less than that. Significantly, the telephone was the first means of communication to allow interactive, real-time communications between individuals within and beyond the immediate locality.

Many communications have constantly evolved and progressed into their current forms. The telephone now includes mobile
communications to complement the fixed-line system. Telephone networks (in conjunction with personal computer developments) have also allowed the development of new media, the most important of which being the Internet with its multiplicity of communications uses. Television, once largely a one-way communications medium has evolved to incorporate some of the interactive communication functions once only associated with other media.

The history of mass communications has been one of suspicion about the social damage caused by each new medium. Social change being equated with the breakdown of society. The accusations against each new medium vary to a degree but the notion that the new means of communication detract or in some way degrade the quality of the interactions between people is a common one. This extends to whether they substitute existing communications such as face-to-face meetings. The new digital media as will be discussed in this thesis, offer new and high-speed opportunities for interaction to those who use them. Delivery of messages can be instantaneous via e-mail, SMS text messaging and relay chat. Further developments to these digital media include video streaming which enables visual and verbal communication between users and not just text-based interactions.

This thesis examines the historical context of the mass communications and attempts to analyse the development of the new digital media within this framework. It concentrates on the extent to which the Internet and mobile communications are integrated into the lives of late adolescents. While the issue of the psychological effects of digital communications on the psychological well-being of users is the basis of the thesis, its overall orientation
is that digital communications contribute positively to the lives of users.

The Definition of Digital Communication Media

Members of modern industrial societies are almost certain to be users of the ‘new digital media’. Using a personal computer (PC) at work and at home, using PC’s or other devices to access the Internet and the use of a mobile phone all involve the use of digital communications technology. Use of these digital media has become commonplace, as we will see. Furthermore, it is apparent that these media have become an integral part of many people’s lives.

For the present purpose, a reasonable definition of digital communications would include the following features:

a) the use of digital (binary) information in communications
b) the use of electronic means of transmission allied to computer and telephone technology
c) interactivity in real time or with minimal delay
d) person to person communication reciprocally

In other words, digital communication is distinctive in terms of the technology involved and its functionality as a form of interpersonal communication. While digital communication shares many features with other forms of communication, it does not share all of them. Letters involve interpersonal communication but not in real time and not through primarily electronic means, for example. Television stations may broadcast digital signals but there is little or no interactivity or bi-directional communications. Limited e-mail service, shopping and gaming via digital television is now being
offered. These services are still somewhat limited when compared to their Internet counterparts.

Communications is a broad term which incorporates a variety of delivery methods, purposes and functions. The term communications is used in a variety of settings and can refer to both human interactions and computer interactions. More traditionally, communications have been discussed in terms of interpersonal interactions in face to face settings. However, the emergence of the Internet and other digital communication media presents a new setting for interaction to be discussed.

Modern communication is perhaps best defined as 'the process of representing, transferring, interpreting or processing information (data) among persons, places, or machines. Communications implies a sender, a receiver, and a transmission medium over which the information travels. The meaning assigned to the data must be recoverable without degradation' (Outside plant software, 2001). This is not a strictly psychological definition but incorporates many of the aspects of both face to face and computer mediated communication.

The Internet is a whole system of computers communicating with each other. Each computer connected to the Internet will send and receive information throughout the duration that it is connected. The computer mediated communication for the human user is just an extension of this process. E-mail and all the other human communication methods online work via these same systems. In terms of this thesis communications will refer to face to face and computer mediated communications rather than the digital processes employed by computers.
**Personal Computers**

The personal computer (PC) has profoundly affected on our lives both in the home and work environments. Several key inventions predated computers in the recognisable form which they do now. Early computers were large mechanical devices and very expensive. In the 1950s most computers were massive in size, valved, and massively expensive. An example of this would be the PDP 1 produced by the Digital Equipment Corporation in 1957. This cost $120,000 to buy which was significantly cheaper than other machines on the market (Winston, 1998). For this reason most of these early computers were in military service. Perhaps one of the most important influences in the development of personal computers was the development of microprocessors in 1969. However, it was not until 1974 that these microprocessors were used in personal computers.

In 1974 the designs for a self-made computer were published in *Radio ElectroniCS* magazine (Polsson, 2001). The magazine gave detail of how to build the computer and the reader could order the circuit boards through the post although the chips had to be ordered directly from Intel and other companies with which to finish the computer. This computer was very crude by modern standards and offered no memory or storage facilities. This was soon followed by the Altair 8800 which was a more rounded and complex machine. The IBM PC was released in 1981 selling 35,000 of them in the first year. In 1983 Microsoft Windows was announced. However, it was not until November 1985 that Windows 1.0 was first available to consumers. Windows 2.0 was released 2 years later and Windows 3.0 in 1990.
Along with technological improvements, computer technology has been increasingly integrated into the work, education, and private lives of individuals. Personal computers have increased in power, decreased in size and mass and, most importantly, decreased in relative cost. As the ‘hardware’ has become cheaper this has increased the availability and access for people of all ages and incomes. An example of this is that the cost of the cheapest IBM PC released in 1981 was from $1,565 which roughly equates to about $4,000 today (IBM History, 2001). Today a good PC can be bought new from as little as £400 although prices still range into £1,000s for the top range models.

Table 1.1: The growth of PC use between 1995 and 2001

<table>
<thead>
<tr>
<th>Region</th>
<th>Year 1995</th>
<th>Year 2000</th>
<th>Year 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Europe</td>
<td>62.4m</td>
<td>139m</td>
<td>158m</td>
</tr>
<tr>
<td>USA</td>
<td>93.5m</td>
<td>162m</td>
<td>175m</td>
</tr>
<tr>
<td>Worldwide</td>
<td>229m</td>
<td>530m</td>
<td>603m</td>
</tr>
</tbody>
</table>

As Table 1.1 illustrates, in 1995 there were 62.4 million PCs in use in Western Europe (Computer Industry Almanac, 2001). By 2000, this figure had increased to 139 million PCs. The following year this had increased to 158 million PCs. In the US, the figures for this period were 93.5 million PCs in 1995 and 162 million PCs in 2000 and 175 million in 2001. This represents an increase of 81.5 million over 6 years. World-wide figures for the number of PCs in use for this period increased from 229 million to 603 million suggesting a rising integration beyond the USA and Europe. Based on this trend, it has
been predicted that there will be 1,150 million PCs in use by 2007 (Computer Industry Almanac, 2001).

This increase in the number of personal computers has been coupled with the increased availability of Internet access through a variety of service providers. Fixed-rate monthly subscriptions are now available rather than the pay by the minute services previously offered. This has fed the growth of Internet usage and decreased the cost of access. This is reflected in the growth in the numbers of Internet users in the period 1995 to 2000 as well as the growth in Internet traffic in the same period:

- Business users: Daily Internet use grew from 19 million Americans in mid-1997 to 32 million at the end of 1998 (Forrester Research, 1999). In 2001 it was reported that 63% of businesses in the UK had access to the Internet and 50% of businesses in the UK had their own website (National Statistics Office).

- Domestic usage: Estimates suggest that in 1998 66 million US adults accessed the Internet daily (Intelliquest, 1999). This increased to 83 million by the end of 1999. This shows an increase of 17 million users in North America alone over just one year. In 1998, Americans used the Internet for a total of 65 million hours per day. One source predicted that by 2003 60 million American households would be daily users of the Internet (Forrester Research, 1999). In the months of January to March 2002, 10.7 million UK households were connected to the Internet (National Statistics Office, 2002). The ‘average’ Internet user (combining home and work use) spends 52 hours a month online. This averages out to about 32 minutes per online session.
session and a average of 1,307 webpages viewed in total each month (Nielson/NetRatings, 2001)

Communication usage: It is estimated that 78% of UK Internet users are engaged in sending and receiving e-mails. (National Statistics Office, 2002). GVU (1998) found that over 20% of Internet users had a personal e-mail account. Twenty five percent of users had multiple e-mail accounts. The most common pattern was a work account and a home account.

The rapid growth in the use of the Internet for information, communication and business is clear. One source predicted that by 2003, 60 million American households would be daily users of the Internet (Forrester Research, 1999). While most of the available research on Internet usage tends to be American in origin and focused on the situation in the USA, the same trends seem to be true of the UK. For example, in the quarter of 2004, Official figures show that 12.1 million UK households were connected to or had access to the Internet which compares to only 3.2 million in the first quarter of 1999 (National Statistics Office).

The range of uses for the Internet is far wider than for other communications media. The Internet is used for the buying and selling of goods and services. It is estimated that private internet purchases for 2002 reached approximately £6bn (weboptimiser, 2001). Buying over the Internet is a realistic possibility for many goods and services. Services offered online range from support groups (e.g. the Samaritans) through to medical help and advice (e.g. NHS Online) to fansites and dating (e.g. Music and AOL dating). Though many of these functions of the Internet could be carried out using the traditional mass media, this would not be practicable for some smaller businesses because of costs.
post lacks the speed and convenience that the Internet offers for many commercial purposes.

The above concerns only direct selling via the internet. It is more general than that in reality. For example, TV, newspaper and magazine advertisements now frequently provide web addresses to access more information and to enhance sales. Evidence suggests that the on-air promotion of specific websites for television programs is linked to increased use of the websites during that time period (Coffey & Stipp, 1997).

One unique aspect of the Internet is the wide availability of dynamic interpersonal communication which is virtually conversational in nature. The range of ways of communication includes:

- **Internet relay chat** is a system where two or more people are able to communicate through text where the messages written are relayed instantly to all individuals in the chatroom. These chatrooms are usually identified by a specific topic area for users.

- **Private chat** with another person is also possible in a chatroom by restricting who may view, enter and contribute into the conversation. In a chatroom there is the option to talk to anyone else who is there. The current participants in the chat-room are usually displayed in a list form somewhere on the screen. The conversation is displayed in a scrolling box in the centre of the screen. If one chooses to enter the conversation you can type your comment in a 'text-box' at the bottom of the screen and then click the 'send' icon. The message will appear on the screen in the conversation box and the other users can see it. These
messages can be addresses to a specific individual by adding their name to your message. If anyone chooses to respond to the message they will follow the same process and their message will appear on screen.

- **Message boards** are much like notice boards to which anyone reading a page may reply. They are not asynchronous chat as in the Chatroom. The message can be left for as long as the page exists and replies can build up. The message poster usually checks these regularly and the page is updated.

- **Forums** tend to be a mixture of relay chat and the leaving of messages. The forums are usually attached to specific websites. In a similar way to before, the visitors to a site are given the opportunity to leave messages and input for the site creator.

E-mail, however, dominates the use of the Internet for interpersonal communication. This is widely used by most people who use the Internet. To stress its importance, a number of statistics may be called upon. For example, 78% of UK Internet users are engaged in the sending and receiving of e-mail. Of these, 34% use the Internet only for this purpose. In comparison, the use of Internet relay chat, which only accounts for 17% of U.K usage. (National Statistics Office, 2001). In February 1998, AOL handled 28 million e-mails per day. A year later the figure had risen to 51 million e-mails daily. In other words, an annual growth of 82% in the short term.

**Mobile Phones**

The telephone has been in existence for over 100 years but the mobile phone is a relatively modern invention. Spawning in the USA
from communications devices developed during the Second World War such as 'walkie-talkies'. The first guise in which 'mobile' telephones became available was the fixed car phone introduced in Louis, Missouri 1946 and a further 24 cities soon after (Agar, 2003). These phones would only work within the city and had a very limited amount of traffic they could cope with. A 'highway service' was offered in 1947 between Boston and New York but this was still restricted in scope. Development of mobile communications was slow because of restrictions with the radio frequencies that could be used and the sheer size of America. AT&T and its subsidiaries dominated this early period.

Perhaps the most significant step in the development of the mobile phone was the introduction of the Motorola 8000 in early 1984. This was the first hand-portable mobile phone and was the classic 'brick' phone. A major problem with the phone was that it weighed only slightly less than a bag of sugar and was rather bulky. Problems with patchy reception and a high cost meant that the adoption of this technology was slow in America (Agar, 2003). The European experience of mobile communications technology was smoother and saw a greater adoption than the equivalent period in the states.

The Nordic countries were the first to embrace mobile communications technology and for example, Sweden had 20,000 mobile phone users in 1981. This represented a higher proportion than in any of the other European countries (Agar, 2003). In 1982 the British Government offered two analogue mobile phone licenses to competing firms. The team of British Telecom and Securicor gained one licence and traded under the name 'Cellnet'. The other licence was awarded to a consortium which was lead by a defence firm called Racal. This consortium decided to trade under the name...
of 'Vodafone'. The first actual mobile phone call made using these services was made on 31st of December 1985.

'Mercury One2One' was launched in London in September 1993 and this was followed in April 1994 by the 'Orange' mobile phone network. By the mid 1990s all of the mobile telecommunications services in the UK had become digital. Intense competition between the phone networks lead to rapid development of marketing ideas and lower hardware prices. One2One and Vodafone developed 'pay as you go' tariffs for the phone which allowed the user to just buy the phone and pay a set amount of credit for calls than the phone can be used until the credit is used up. This can be repeated by buying 'top-up' vouchers for various amounts of credit. It was Orange however, who were the market leader in the UK at that time. Clever advertising, better value for money and the availability of attractive phones (such as those made by Nokia) were key to this success.

A good indication of the speed with which mobile phone use grew in the UK is connections to the major providers. 1988 saw Cellnet attain and surpass 100,000 customers. This figure had increased to 1 million by 1994 and 11 million by 2002. This trend was repeated for other networks in the UK. In the summer of 1994, One2One also achieved its 100,000th customer. Its millionth customer was connected in 1998 but more importantly it connected its 5 millionth user in April 2000 and its 9 millionth in 2001 (Agar, 2003)

Mobile phone networks are to be found in virtually every country of the world. The list of countries which can be dialled from the U.K. is long. O2, for example, currently allows a user to dial and call the U.K. from 144 different countries (O2 online). And that is an incomplete list of countries with mobile phone networks. Countries
without networks would seem to include North Korea at the time of writing. Of course, mobile phone networks do not have complete coverage geographically. For example, in the UK the typical coverage is between 90-95% of the population for the major networks.

Digital phones appear to be a vital part of life to many of their owners. The ownership of a mobile phone in the UK nearly quadrupled in the period between of 1997 and 2002 from 17% of households to 65% (Summerfield & Babb, 2003). The incomes of companies are large. Vodafone reported profits of £10bn in May, 2004. Overall it made £33.6bn of sales for the 2003/4 period (ofcomwatch, 2004).

The Finnish company Nokia has become probably the most influential manufacturer of mobile phones. It was the first company to introduce changeable covers for phones with the 3210 released in 1999. The 5110 released by the company a year earlier incorporated a limited changeability to the covers but the 3210 was the first to offer front and rear cover changes. This allowed for the user to change the look of their phone as fashion or taste required. This of course came at a certain price and covers cost from £20-30.

The Nokia Company can trace its roots back to a wood pulp mill in 1865. It progressed as a paper and electrical power producer in the late 1800's. The company has diversified into several areas such as cable and rubber manufacture and more recently information technology and telecommunications. It was not until the 1960s that it became a producer of radio phones which were the early predecessors to modern digital mobile communications. In the early 1980's Nokia was the largest provider of digital telephone exchanges in Finland (Nokia Website). The mid to late 1980s saw
the introduction of the first Nokia mobile phones. Since 1990s Nokia has been at the forefront of mobile phones technology and have become a market leader. Net sales for the Nokia company reached 30Bn Euros for the major markets of Europe, North and South America, Finland and Asia Pacific in 2002 (Nokia Website, 2004).

The first text message was sent in 1993 by an engineering student at the Nokia mobile phone company. At the time this means of communication via a mobile phone was not considered important (Agar, 2003). It was the phone users who were responsible for making SMS text messaging as significant and as popular as it is now.

In January 2002, nearly 1 billion text messages (SMS text messages – Short Message Service text messages) were sent in the UK (Cellular). The typical cost of a text message is up to 15p depending on the network and type of package. Thus around one hundred million pounds would be a round figure for the expenditure on text messages in the UK – each month. Teenagers account for the largest proportion of these text messages. There have been cases of children as young as 12 running bills in excess of £60 a month just on text messages. It is unknown how typical such cases are (Cellular, 2001).

In September 2002 there were 869m mobile phone users globally (Cellular 2001). According to this source, of these 680m send text messages from their mobile (Cellular). However, these figures do not indicate whether they refer to individual phone numbers or individual users. For example, some phone handsets and networks allow multiple ‘lines’ from an individual handset. This means that a single user can have two separate numbers for just the one handset. One line/number for business calls and one line for private
calls is perhaps the clearest use for this function. If this is not taken into account when the figures are calculated then it could exaggerate what the numbers actually represent. Either way, this illustrates dramatically the scale of its infiltration into our lives.

**Summary**

As the figures have shown, the new digital media have rapidly penetrated communities on a world-wide scale. This trend shows every sign of continuing into the foreseeable future. Given this assumption about the centrality of digital communications directly in the lives of significant numbers of the population, research into the social impact of these new media on their users, and perhaps non-users, is obviously a research priority for communication researchers and social psychologists among others. The next chapter will introduce the historical debate about and the issues raised by the introduction of various media and communications.
Chapter 2: Social Psychology and Mass Communications

Overview

This chapter discusses the historical context and focus of research into the mass media. The development of the digital media is a relatively recent phenomenon which has been surrounded by debates redolent of those raised around the introduction of many forms of mass communication. This chapter reviews the main issues of concern about the mass media and the contribution that Social Psychology has made to the debate.

The Historical Context of the Media

The development of the media for both communication and entertainment has been a relatively recent phenomenon. Throughout the 20th century, the media developed from a small, localized concept into a global phenomenon. What are the 'media' referred to in this context? Mass media is a general term for a number of technologically based methods which involve a variety of actual transmission means. These means range from the development of printed texts such as comic books and newspapers through to the development of the cinema, radio, and television. Each of these involves communication of 'information' to a large audience. Alongside these has been the development of specific interpersonal communication media such as the telephone and more recently the Internet and mobile communications.

While the Internet is directly analogous to other forms of mass communication in that it can involve the distribution of information to a large audience, the other communications media such as the telephone and mobile communications are about person to person
communications. E-mail (which includes so called 'spam') may be conceived as both a means of mass communication and a means of person-to-person communication.

Despite the development of new media throughout the 20th Century, the major methods of mass communication all survive although often in ways which were unknown when they were first introduced. Newspapers are still being printed although using technology very different from the original type-setting technology. The cinema is still prevalent though vastly changed by innovations in digital technology such as IMAX and the introduction of DVD. However, DVDs are perhaps more comparable VHS because they fulfil similar functions.

The telephone is also still in use though with an ease and convenience probably unimaginable to early generations of users. Despite past concerns about the possibility that newer media would displace the older media, this has not proven to be the case (e.g. Coffey & Stipp, 1997). For example, television was seen at its introduction as a major threat to the continuation of both the cinema and radio. Despite this, both have survived and generally prospered. This can be seen by the 2003 UK cinema attendance figures which reached 167.3m visits to the cinema (Britfilms¹, 2004). This is expected to rise past 200m by 2008 (Britfilms², 2004). The UK box office takings reached the value of just under £810m (Britfilms³, 2004) which also demonstrates that this long running media is still clearly prospering.

So television did not spell the end for the cinema nor has it replaced the written word. Each new media has been integrated alongside the previously existing media rather than replacing them (Coffey & Stipp, 1997). There is, of course, change as a consequence of the
introduction of the new media. For example, radio has survived by addressing the needs of diverse audiences, the growth in numbers of stations and, even, spreading to the Internet (such as the new digital radio services offered by the BBC). The cinema, once an important means of distributing the news, no longer has this function. It is argued here that the new digital media, such as the Internet and mobile communication devices, have and will have a similar impact on the form and nature of the older technologies.

It cannot be stressed too much that the introduction of new methods of mass communication is a stimulus to change and adaptation by the older forms of mass communication. Many of the traditional media have incorporated newer technologies to extend the range of their services. Internet sites exist for all the major television stations to complement the actual programming. Similarly one will find magazines devoted to specific forms of programming such as soap operas. Digital television has provided an increase in interactivity between the individual audience member and the media organisation. This, at the same time, has begun to break down the traditional one-way nature of mass communications which once could be regarded as almost a defining feature. This is no longer the case. The increasingly interactive nature of television makes use of other technologies including the telephone. Perhaps more importantly, it makes a great deal of use of the Internet too. E-mail is commonly used as well as a (limited) number of Internet websites.

Many television programmes support the use of SMS text messaging as well as e-mail for participation in competitions, comments on sports & topical debates along side traditional methods such as the telephone and letters. Companies such as ITV also offer SMS text message based information services which send
messages to a person’s mobile telephone (at a cost) with updates about sports such as football and Formula 1. This is a further example of new media being integrated into existing media while at the same time producing change. Economic factors are likely to be a primary driving force for this integration but inherent to that there has to be a demand for these services and the capability to use them. Indeed, program related website usage has been shown to increase during the program itself (Coffey & Stipp, 1997).

Media and social concerns

One of the main foci of social scientific research (and in particular social psychological work) involving the mass media has been its influence and effects on the audience or consumers (Media Issues, 2001) especially children and young people. Generally this has stemmed from long lasting concerns regarding its potential negative effects (Cumberbatch, 1994) especially on the individual, both in terms of their specific behaviour and, more generally, their development and socialization (Lowery & DeFleur, 1995; Strasburger, 1995).

The general view is that vulnerable sectors of the audience are especially likely to be impacted negatively by the mass media. Vulnerability has largely been equated with being young and from poorer environments (e.g. Ferman, 1994, Himmelweit et al., 1958). The association between concerns about the media and government policy have been another key feature of many of the debates surrounding aspects of the mass media. Concerns about the negative impact of the mass media stretch back in time to the introduction of newspapers (Lowery & DeFleur, 1995) and even the printing press (UCLA Violence Report 1996). These concerns have been manifest in social scientific and psychological research from
the early years of the C20th when social workers first studied the impact of the fledgling cinema industry on their clientele (Howitt, 1998). Formal research, especially that funded by government and other concerned organisations, has been common since the 1930s (UCLA Violence Report 1996). In many instances, research has been the result of specific political interventions especially to study things like delinquency, violent crime, sexual behaviour and sexual crime.

**Comic Books**

Media consumed by children, naturally, have been at the forefront of public concern. Long before the invention of the modern electronic media, concern was being expressed about the potential negative effects of the written media. The 1930s saw the development of classic comic book. Superman appeared during this period and in 1939 Batman appeared. In the period of 1940-1945 an estimated four hundred new comic book characters were created (History of Comic Books, 2001). In the post-war period concerns grew that comic books would substitute more formal reading and would ruin generations of the world’s youth (Strasburger, 1995). It is worthwhile noting how such concerns led to some early research into the negative impact of the media on children and young people. (Of course, the Payne Fund studies of the 1930s contained probably the first research of this nature (Howitt, 1998).

In a well-cited study by Hoult (1949), the links between delinquency and readership of comic books was investigated. Whilst some questions have been raised about the way in which participants were matched for socioeconomic status (e.g. Howitt & Cumberbatch, 1975) the findings do raise some interesting points. The sample consisted of male and female participants ranging from 10 to 17 years of age who had been arrested for delinquent
behaviour. They were matched with a non-delinquent sample and their tastes in comic books were investigated. It was found that the delinquent sample indicated that they had read in total, 2853 comics which were supposedly 'harmful'. By comparison, the non-delinquent sample indicated that they had read a total of 1786 of these 'harmful' comics. This does show differential rates of readership of these comics but the figures are still high for both groups. However, there does appear to be a strong relationship between reading comic books and delinquency.

As is common in the field of mass media research, the research did not speak with a single voice. For example, Lewin (1953) found that for a sample of 12 and 13 year old boys there appeared to be no relationship or impact of reading comic books on anti-social behaviour and school performance. Karp (1954) also failed to find differences between aggressive and non-aggressive boys when examining their preferences for the content of the comic book. This lack of evidence was also found in terms of the frequency that the boys read comics and, in particular, the crime comics which were causing the highest levels of public concern (Lowery & DeFleur, 1995).

As concerns grew about the potential harmful influences of comic books the comic book industry was forced to act. As a response The Association of Comic Magazine Publishers was founded in 1947 (Lowery & DeFleur, 1995). This was to serve as a mechanism for dealing with the public concerns about the portrayal of violent and criminal behaviour in the comic books. This was a self-regulatory body which initiated a move to set standards and codes of conduct for the content of comics. A full set of codes of conduct were available by the 1950s to regulate the content of these comics. For example, this code banned content such as detailed accounts of
crimes and acts of torture. Comics even carried a stamp or seal of approval on the front cover to say that they met with the standards set.

The precise influence of the social scientific research into comic books on the increasing controls on comic books does not appear to be documented, though in general research into media effects is part of the pressure towards regulation, censorship, and control. However, since in many instances the inception of research can be seen to be the consequence of government and other organisations making funding available, it is probably best to see research as part of a process towards change rather than the direct cause of change. Rarely is regulation based directly on indisputable research (Cumberbatch and Howitt, 1989). Instead, regulation is based on speculation, 'commonsense' and public opinion.

Cinema

With the development of the cinema houses at the turn of the 20th Century came a growing concern about the impact of media on its audiences (Cumberbatch, 1995). Research into the social effects of the cinema included some of the seminal empirical research of the C20th. Although primitive research was underway before this time, it was not until the 1920s and 30s that these concerns really came to the fore. In the 1920s empirical social scientific research was developing and evolving with a greater emphasis being put onto 'scientific' methods and the newly evolved inferential statistical analyses (Lowery & DeFleur, 1995). This new emphasis in research methodologies was occurring at the concurrently to continued growth in popularity and quality of films.
Early films from the turn of the century were very basic and contained little more than pictures that appeared to move. Over the next decade there was further development in these moving pictures and large audiences came to watch short slapstick comedies. It was during the 1920s that the film industry really became a truly mass medium (Lowery & DeFleur, 1995). At this time, radio broadcasting was in its infancy – the origins of the BBC were in 1919 and those of American radio one year later. It was not until nearly two decades later that television was first broadcast and not until the 1950s that it became a significant medium. Cinema offered a relatively inexpensive form of entertainment at a time when radio had to make significant inroads into the homes of many people.

In 1912 the British Board of Film Censors was created by the film industry in the UK. This was as a response to the popularity of the cinema and concerns over the content of the films. More importantly, it was a reaction to regionally imposed censorship standards which local authorities had been placing on films at that time (The history of British Film Censorship, 2001). The body was set up to offer a set standard which make the censorship of films uniform across all the regions in the UK. In 1916 the president of the BBFC gave evidence to the Cinema Commission Enquiry which outlined 43 standards which must be met for a movie to be accepted by the BBFC. These standards contained items such as men and women in bed together, showing the means/methods to commit a crime and nudity. These standards were very strict in response to the pressures placed by the need for support and trust from the public and policy makers (Lowery & DeFleur, 1995).

Not until the 1920s were formal statistics on cinema attendance compiled. In 1922 statistical data were first collected. In that year
approximately 40 million cinema tickets were being sold each week in America (Dale 1935). This figure rose to approximately 90 million tickets per week in 1929. Of these, it was estimated that 17 million were for children under the age of 14 and 40 million were for young people under the age of 18.

It was not just this mass appeal which gave rise to concerns. The contents of the media touched on themes which were of more general concern in that they concerned the sexual behaviour of young people and crime. In a content analysis of 1500 films at three time intervals (500 from 1920, 1925 and 1930 respectively), Dale (1935) suggested that the three most dominant themes in the films were love, sex and crime. These findings exemplify the prevailing social concerns of adults as well as reflecting concerns that linger about today’s media. The apparent popularity of films amongst the young coupled with their content added gravitas to the first systematic series of studies of the mass media.

The Payne Fund Studies were, then, the first major attempt to investigate media effects on children and young people. This consisted of 13 studies conducted by respected researchers over the period of 1929-1932. The studies were published in 10 volumes in the early 1930s. These studies were designed to investigate aspects such as details about the audiences for and the content of the films being shown. Other aspects included research into the acquisition of information from the films, attitude change, emotional responses, and negative impacts on health and moral standards. The Payne Fund also commissioned studies into the possible influences on the conduct and behaviour of those viewing the films. This early research was pivotal in the development of mass media and communications research. Furthermore, some have argued that the Payne Fund studies were the major impetus to empirical
social psychology with its early emphasis on attitude change (Howitt, 1982).

The work of Dale (already discussed in this chapter) was itself an aspect of the Payne Fund Studies. Other research by Holaday and Stoddard (1933) investigated the amount of information which is acquired when watching films. This study was conducted with over 3000 adults and children who viewed full length films and then were asked questions about components such as the plot details, character details and other kinds of information presented in the films. Through these tests it was found that the memory retention of the participants was high, even in children as young as eight. This was also true for longer term retention in tests taken 6 weeks and 3 months after the initial exposure. It is worthwhile noting the scale of this study (3000 participants) and that of some of the other research described below. The large sample sizes seem to be indicative of how important the research must have been seen at the time.

Emotional responses of children to movie scenes were studied by Dysinger and Ruckmick (1933). This was done using both laboratory and case study methods. In total 150 participants took part in the research with children from a broad range of ages. A selection of adults was also included to allow for comparisons to be made. The galvanic skin responses and cardio-vascular rhythms were measured. These neuropsychological patterns were all taken to be indicators of emotional arousal in the participants. These measurements were taken both in a laboratory setting and in an actual cinema context. The scenes which generally produced the most emotional arousal in the participants were ones of danger, conflict or tragedy. This finding is unsurprising considering this is what the scenes were designed to do. There was little influence
played by the gender of the participants and the levels of emotional arousal. This compares to the small adult sample which showed very little emotional arousal to any scenes which they were presented with. Interestingly the younger children showed little or no reaction to romantic or ‘erotic’ scenes whereas the teenagers showed the greatest changes in emotional arousal during these scenes. This study suggested that films can be associated with higher levels of emotional arousal but does nothing to suggest/support the assertion that this has lasting or harmful consequences on the viewers.

One of the main areas of focus for the Payne Fund Studies was whether the viewing of films influenced the behaviour of the audiences. More importantly, the question was whether this influence was a negative one. Shuttleworth and May (1933) conducted a piece of research to investigate this possible link. Nearly 1400 children participated in their research which employed a questionnaire-based design. This used several measures which were completed both by the participants and by their teachers. It was found that high movie attendees were rated lower for deportment by their teachers than those children who were not going to the cinema as often. They were also rated lower in reputation by the teachers. They also were seen to be less cooperative, less self-controlled and less skilled at judging the appropriate and sensible thing to do. It was however claimed that high movie attendees were more popular than the low attendees (Howitt & Cumberbatch, 1975).

Other studies also attempted to investigate the association between delinquent behaviour and high viewing of films. As part of the Payne fund Studies, Cressey and Thrasher (1933) investigated this interaction. They found that those who were delinquent or truant
were more likely to go to the cinema excessively than non-delinquents. This was further supported by Healy and Bonner (1936).

In an unusual piece of work in the research climate at the time, Blumer (1933) utilised qualitative research methods to investigate the perceived influence of films on the lives of the participants. Again a large sample of 1823 participants was used in the research which is unusual for qualitative research. Autobiographical accounts were taken from these participants who comprised of children, adolescents and younger men and women. The sample was taken from a series of locations with 634 being taken from a student sample. A further 481 participants were taken from College and Junior College students. A total of 583 participants were recruited from High schools. A total of 67 office workers and 58 factory workers also took part in the research. To supplement the autobiographies a total of 135 interviews were also conducted.

The findings suggested that for most of the sample the films had provided them with inspiration and characters in their childhood play (Lowery & DeFleur, 1995). The kinds of films that the participants watched influenced the patterns of their play. After watching a western movie then ‘cowboys and Indians’ would be a choice of game to play. Both the male and female participants indicated these kinds of influence. It is important to note here that whilst this suggests an interaction between watching films and play in children, there is little suggestion that this was in any way harmful to the children. Indeed, it could be suggested that the films actually fuelled their imaginations in their play rather than harming them.
These findings were in some respects replicated in adolescents. Whilst the influences did not take the form of imaginary or fantasy play, there were still reported imitation influences. These took the form of influences on ideas about appearance, mannerisms and social behaviours (according to Lowery & DeFleur, 1995). The participants reported that as they got older they looked at films as a source of how to behave in certain circumstances. These also extended to how to act around members of the opposite sex, the kind of clothes and 'look' to have. It is worth noting that many of these acts of imitation were passing trends which did not linger although some did persist.

This has only been a summary of some of the studies and some of the main findings from the Payne Fund Studies. These studies as a body of research were the foundation of much of the future research regarding mass media and concerns over the potentially negative effects these media may have. The studies have less relevance in modern society because of the huge changes in the amount and types of media available (Lowery & DeFleur, 1995). The studies served to support the fears and concerns that were growing at the time. These studies are also indicative of the kinds of concerns and work that would follow the development and integration of the television.

In the early 1930s the movie industry altered its Production Code to make it more strict concerning the content and themes in their films. This was also coupled to an increase in the strictness with which the Production Code was enforced. This enforcement was conducted through the Hays Office. This is another indication of the influence that public concern and early research was having on the cinema.
The Hays Office was originally known as the Motion Picture Producers and Distributors of America (MPPDA). This was a self regulatory body set up by the industry to regulate the content and themes contained within films. Within this organisation Will H. Hays became so prominent that it eventually became known as the Hays Office (UCLA Violence Report 1996). The code of conduct issued standards for a wide range of topics covering issues such as sexuality, violence and criminality. Despite this large range of topics the codes of conduct can be roughly condensed into 3 overriding themes. These themes are; 1: The films should not teach viewers how to commit a crime. 2: The films should not inspire the viewers with the desire to copy any crimes portrayed. 3: The films should not be seen to justify or portray criminality as heroic.

A similar set of standards for conduct were outlined by the BBFC in late 1940s when Arthur Williams became secretary to the board under Sir Sidney Harris. The guidelines originally set out in 1916 were updated to cover three main principles. These were broadly 1: Was any of the content likely to impair moral standards? 2: Was it likely to give offence to a reasonably minded viewer? 3: What effect would it have on children? (The History of British Film Censorship, 2001). This was followed by the introduction of the 'X' category in British film classification in 1951 (UCLA Violence Report 1996). This classification was to signify that the film would be unsuitable for anyone under the age of 16. This was not just reserved for films with undesirable content. The category extended to include anything unsuitable for children but would entertain adults.

The use of nudity or reference to pre/extra marital sexual conduct were still heavily censored and frowned upon by the BBFC. This also applied to antisocial or rebellious behaviour which was also seen to
potentially lower moral standards and may promote this behaviour to viewers.

Also in 1951, the Wheare Committee was sponsored a survey of 38,000 young offenders under the age of 16 who attended court over a 6 month period. The committee concluded that in about 0.4% of the cases the viewing of films at the cinema may have had some relationship with their criminal behaviour (Home Office, 1951). This figure is very low and fails to suggest a convincing link between cinema attendance and criminality.

The regulatory system in America lasted until the 1960s when it was replaced. These regulations were voluntary on the industry and used a rating system devised by the Classification and Ratings Administration (CARA). These were the basis for the classification system that is still currently in use. Indeed, a number of the original classifications are still in use. The rating system introduced in the USA 1968 consisted of classifications of G, M, R and X where G was suitable for a general audience and X was only for a restricted audience. These regulatory codes were implemented by the Motion Picture Association of America (MPAA) and acted as a guide to audiences on the suitability and content of the films.

It was not until the 1970s that the British classification system would change again. In the 1960s there was a relaxing of some of the standards in response to relaxing public attitudes (The History of British Film Censorship, 2001). The BBFC weakened their stance on the protection of moral standards suggesting that it was not their responsibility to be the guardians of this. Whilst attitudes to previously controlled content were relaxed the BBFC still required content to be cut out or edited before classification would be given. It was in 1970 that a new 'AA' classification was introduced. This
meant that the film was only suitable for over 14s. The ‘A’ rating would now refer to anyone over the age of 5 but with the provision that some of the content may not be considered suitable for under 14s by the parent (The History of British Film Censorship, 2001). The age restriction on the ‘X’ certificate was also raised to refer to suitability for people from 18 years of age rather than 16 years of age.

In 1982 the more familiar modern classification system was introduced by the BBFC with ‘A’ being replaced by the ‘PG’ category, ‘AA’ being replaced with the ‘15’ certificate and ‘X’ became the ‘18’ certificate. A new certificate was also added. The ‘R18’ certificate was introduced for materials of a sexually explicit nature. The Video Recordings Act of 1986 meant that the content of videos now became included in the BBFC’s responsibilities. This was due to concerns about cuts which were made for presentation in cinemas being reinstalled in the video version of films (The History of British Film Censorship, 2001).

The BBFC also became known as the British Board of Film Classification at this time. Further extensions in the classification system have been introduced such as the ‘12’ certificate introduced in 1989. Such classifications can now be found on videogames although this is not a legal requirement currently. The Video Standards Council (VSC) was also formed in 1989 to oversee and develop codes of practice within the video industry and latterly the videogame industry. The Criminal Justice and Public Order Act of 1994 extended the 1984 Act to include any electronic media storage device in response to new media forms (CCMS, 2001).

Perhaps some of the detail in the regulation and classification systems is not the important issue here. What is important is the
nature of the concerns about the cinema and the role of research in examining these concerns. By and large, attention was focused on the negative impact of the new medium hence the apparent need for control. Furthermore, young people and children tend to be the focus of the regulation though, of course, not entirely so.

**Television**

The development of the television into a mass medium in the 1940s eventually sparked the largest and most persistent concerns both politically and socially about potential media effects (Violence and TV, 2001). It is not the mere introduction of a new medium of mass communication as such which sparks concern. As we have seen, the growth of cinema was slow at first then began to reach a significant integration into the lives of individuals in the 1920s. It was then that significant research attention was first paid attention to it. This seems to be the case with television too. It was not until the late 1950s that researchers in Britain and the USA began to pay it attention.

This is more than a decade after the introduction of television services. So concerns arise due to the integration and domination of the television within society. Indeed, by way of illustration, Strasburger (1992) calculated and claimed that the average American child at the time would have watched between 7 and 10 years of television by the time that they were 70 years of age. It was also claimed that by the time the children had finished full time school education they would have spent more time watching television than in class.

By 1960 it is claimed that 150 million Americans were living in a home which owned a television (UCLA Violence Report, 1996). This
accounted for nearly 90% of all households in America (Lowery & DeFleur, 1995). This is another indication of how rapidly and extensively the television integrated into the lives of people. This trend was also reflected in the integration of television into Europe. In January 2003, 24.5 million households in the UK owned a television (BARB, 2004). This compares to approximately 5.7 million households in 1956. By 1960 this figure had risen to 11 million households and this trend continued through the next decade and by 1970 16.9 million households in the UK owned a television. By the start of the 1990s this figure had risen to 21.5 million. By 1992 83% of UK households had at least one television set (Infoplease, 1996).

These trends continue in recent times. In 2000 the 'average' person in the UK watched a total of 171 minutes of television per day. Of this, 114 minutes was spent exclusively watching the television rather than watching whilst doing another activity (National Statistics Office, 2003). It has also been shown that 163 minutes of the total time spent watching television took place in the people's own homes. Only 6 minutes per person, per day was spent watching television at the homes of friends. It has also been stated that 42 minutes of the television viewing time was spent watching television alone or with strangers. The most common companions for watching television with were other members of the household (86 minutes). Watching television with friends only accounted for an average of 13 minutes per person, per day.

In the context of researching the potential 'effects' of this prevalence, the television has presented several methodological issues for researchers. Classical experimental research methods are somewhat undermined by this prevalence of television. To have a control where a group has not been exposed to this media is an
practical impossibility except for those rare, isolated communities to which television was introduced very late (Cumberbatch, 1995). This is especially the case in Western societies where countries such as the UK and America have such high levels of television ownership. Populations exist within the developing world where such experiments may be possible but it would be difficult to draw any inferences which could be convincingly generalised to a Westernised population.

Himmelweit, Oppenheim and Vince (1958) conducted a large scale study into the influences of the arrival of television. This was a simple before and after measure and looked to see if the introduction of television changed the levels of aggression in children. The key finding from this research was that there was no change in aggression due to television (Cumberbatch, 2001). However, criticisms of the measure of aggression have been made because it consisted of one item on a questionnaire which was completed by the teachers of the children (Cumberbatch, 1995).

In 1961 Schramm et al. published an important work covering a series of studies designed to investigate the functions of television viewing on children. This was the first major report in the USA into investigate these kind of potential media influences. Whilst the studies were designed to investigate a broad selection of topics within the media, the influences of viewing violence on television was one of the important topics.

One of the first questions that the research sought to address was why children watched television. Schramm et al. (1961) suggested that these patterns could be grouped into 3 main primary reasons. Perhaps the most obvious of these is that it is used for purely entertainment purposes. Whether it is used to get away from issues
and concerns in their real lives or just to alleviate boredom. The use of the television as a means of entertainment is a more passive behaviour because it does not require working at or a great deal of thought. This is one of the key functions as a means of entertainment.

The work of Schramm et al. (1961) also identified that children use the television as a source of information and learnt from it. This learning involved elements about social etiquettes, appearance and even the learning of sports techniques from watching professionals on the television. The latter perhaps being a less common occurrence than the others. This finding presents an interesting parallel with the findings of Blumer (1933) and his research into the cinema and films discussed previously in this chapter. This suggests that these kinds of media do present a behavioural influence although as was discussed earlier in relation to the work of Blumer (1933), these tend to be short-lived and only passing phases of behaviours.

It is also important to note that the authors considered any learning that was done from the television programs to be purely incidental and not a deliberate purpose for watching television. This would usually occur through the viewing of television for entertainment.

Perhaps one of the most important functions that were reported in the work of Schramm et al. (1961) was that it was reported by many of the children that the television provided them with themes and topics to discuss with others. This would appear to be creating a basis for conversation and interaction based on the programming. It was suggested that this even helped them at school because it gave them topics with which to discuss with the other children (Lowery & DeFleur, 1995).
The third reason cited by Schramm et al. (1961) was a means of ‘social utility’ provided by watching television. This was particularly apparent for the teenage sample where television could be used as a means of social interaction. It provides an inexpensive way to entertain themselves and their peers. Perhaps even more importantly to the age group, it has been suggested that it provided a good excuse for mixed gender groups to ‘hang out’ together. This also provided them with topics for conversation to discuss with their peers and importantly on dates (Lowery & DeFleur, 1995). This again is evidence of this media providing a source for social interaction.

It was suggested by Schramm et al. (1961) that the most important uses for the television were for entertainment and information purposes. Whilst the research appeared to show that there were some influences on the children from watching television it did not address whether these influences were or could be harmful. Perhaps one of the most important concepts to be raised by this work was that the authors believed that the search for ‘effects’ implied that television victimised the viewer which undermines any influences that the viewer has (Lowery & DeFleur, 1995). Indeed, they suggested that it is the features and characteristics of the child viewing the television which governs the message that they receive from the program. The personal, social and psychological elements of the viewer contribute to the information passed on from the program. In this way, the same program can be interpreted a number of ways by a number of different viewers.

It has already been suggested that the viewer of the media brings to it their own interpretations and understandings. It is also important to know what the television brings to the viewer. During
a one week period in October 1960, Schramm et al. (1961) observed the television programming between 4pm and 9pm everyday and recorded the kinds of programs and the content portrayed. Over the 100 hours of television viewed they recorded that there was a large amount of violence portrayed in many forms over this period. Indeed, during this period there were 12 murders, 37 physical fights, 21 people shot and a total of 37 gunfights or other incidents involving firearms. Other content included 4 attempted suicides of which 3 were successful and even a horse trampling someone (Lowery & DeFleur, 1995).

The authors found that half of the characters were either involved with the law or involved in breaking the law. In some cases the characters were involved in both. It is important to note that whilst cartoons made up the majority of the content (18%) their content was not included in the analysis because it was deemed to be humour orientated rather exciting (Lowery & DeFleur, 1995). This is somewhat surprising because most of the younger children studied in the research indicated cartoons as their favourite type of television program.

This research came at the beginning of what was a tumultuous decade in America and the media would be one factor that would be drawn into it. During this decade there were a series of political assassinations, the Vietnam War and a rise in the levels of violent crime. This culminated in President Johnson convening the National Commission on the Causes and Prevention of Violence in 1968. One of the main focuses for the Media Task Force was the mass media and its influences on the viewers (UCLA Violence Report, 1996).

Television was one of the main media focuses that the research investigated. The body of research which the commission initiated
was made into the book 'Violence in the Media' (Bell and Baker (eds), 1969) which was over 600 pages in length and separated into three sections. The third section was dedicated to violence and the television. This section comprised of several studies conducted by a range of respected researchers. One of the major works from this section was the content analysis of television programming by George Gerbner and the Annenberg School of Communications. This examined the violent content of television programs between 4pm and 10pm on week days and 8am to 11am on Saturdays in October 1967 and 1968.

The findings suggested that approximately 80% of the programs shown contained at least one act of violence for both years. It was also found that there had been a slight increase in the overall frequency of violence being shown in 1968. It was found that crime/western orientated programs contained the most acts of violence (96.6% contained violence). It was also found that 93.5% of cartoons examined contained scenes of violence. Comedy programs contained the least displays of violence with only 66.3% having this kind of content.

This research also sought to investigate the context of the violence in a qualitative way to go beyond just how much violence there is on television. The research was designed to look at issues such as who is being violent, to whom and with what justification or punishment. About 80% of violent acts were portrayed in a serious and non-humorous way although most involved close in fighting and the use of some kind of weaponry. Due to restrictions of technology and taste the violence was not graphic in terms of physical pain or blood and gore. The on the side of 'good' were just as violent as those on the side of 'bad' and many were not punished or did not suffer in any way for their actions.
Based on the findings of the content analysis the Media Task Force made a series of interpretations and assumptions about the 'norms' which television presented about violence. Some examples of these are that young and middle-aged men who were unmarried were more violent than any other group. It was also suggested that foreign and coloured people were more violent than white and American people. It was also suggested that television violence shows that physical violence can kill people but it does not cause pain whilst it is being done. Perhaps one of the key assertions is that violent behaviour will go unpunished.

The overall conclusion of the Media Task Force suggested that whilst it cannot be claimed to be a direct cause of violence in society, the prevalence of violence on television is likely to be a contributing factor. This is a very strong claim regarding the influences and effects of violent media. Whilst television was the most prevalent media the task force also suggested that all media has some responsibility for the increasing violence levels at the time (Lowery & DeFleur, 1995).

The concerns and issues raised about the media and violence relationship fell into the categories of short and long term effects. The short-term effects were basically that seeing the violence on the television gave the viewers the knowledge of how to commit the violent acts. This was also coupled with idea that the viewers are more likely to display the violent conduct in real life if they think that it will be rewarded rather than punished. Especially if a person finds themselves in a similar situation to one portrayed on a program (Lowery & DeFleur, 1995).
For the long-term effects, the concerns were that prolonged viewing of these violent media could diminish the importance of non-violent method of conflict and problem resolution. The portrayal of violent methods of resolution could socialise the viewer into using violence to solve problems. Other concerns lay with the inaccuracy of portrayals of race and ethnicity. Especially in relation to violence and violent conduct. Concern was also raised about portrayals of them as the 'baddies' and an overall negative association between groups. Especially those that do not have much contact between them.

It is important to be aware that the Media Task Force drew their conclusions based on inferences taken from incomplete information and has been criticised for this (e.g. Lowery & DeFleur, 1995. UCLA Violence Report 1996). As has been discussed previously in this chapter, the viewer of the television programs brings their own ideas and understandings to the program content. As a consequence of this the same event or program can be interpreted differently by different people. As such, it is then difficult to make causal links between what a program shows and how it is interpreted. Indeed, it is possible that different researcher's would struggle to agree on the message contained in the same program (Lowery & DeFleur, 1995).

However, whilst there are clearly flaws in the process used to draw these conclusions it is important to acknowledge that these conclusions were based on logic and professional judgement rather than purely haphazard reasoning. Indeed, whilst the works have been criticised they have still remained important and were the basis for further research (UCLA Violence Report 1996).
It is important to be aware that not all research has concentrated on the potentially negative aspects of viewing television. Indeed, if the assumption is made that television (especially violent) can be 'harmful' then inherent to this is the notion that positive television could be beneficial. Indeed, Friedrich and Stein, (1973) found that in preschool children, those who watched a series of pro-social and positive programmes remembered much of the positive messages from the programmes. It was also found that the children were more cooperative and helpful than children watching neutral or aggressive programmes. The use of role-play involving scenarios from the programmes was found to further reinforce this positive influence. Other research such has also found support for the notion that television can have pro-social influences (e.g. Lee, 1988. Rushton, 1979, 1982)

In a review of over 100 studies into the pro-social influences of television on children, Hearold (1986) concluded that there appears to be evidence to support the notion that pro-social programming generally encourages children to be more helpful. Hearold also suggested that pro-social influences were twice as strong as any negative influences such as violence. It is important to note that most research into the pro-social influences of television has concentrated on measuring short-term effects rather than long term influences. It has also been noted that the evidence suggest that this can be achieved in a laboratory setting but it is still subject to the methodological flaws associated with laboratory work (Howitt, 1998). These flaws include issues with the application of laboratory findings to 'real-life' settings and the relevance of them.

The Media Task Force report was very quickly followed up by the 6-volume Report of the Surgeon General of the United States which was conducted by the Surgeon General and the National Institute of
Mental Health (NIMH). The U.S. Congress budgeted $1 million for research to be conducted to examine the effects of television violence on children and adolescents.

Overall the report was subject to massive amounts of criticism when it was published in 1971. These have been put forward on a number of levels. One of which is about the way in which the panel members were selected and errors and abuses within this process. This stems mainly from the exclusion of prominent researchers from the time at the demand of the broadcasting companies. This includes researchers like Albert Bandura whose 1965 work on imitation and social learning was considered very important (Lowery & DeFleur, 1995). Other criticisms have stemmed from methodological issues such as the relevance of laboratory experiments to ‘real-world’ settings. Each of the many studies contained in this report can be criticised on an individual basis but these are the overriding issues.

The controversy which surrounded the report culminated in a Senate hearing where the conclusions of the report were discounted and only the technical research volumes were included. By the end of the hearings the broadcasting organisations agreed that media violence had adverse effects of young viewers. It is important to note that the companies were under considerable pressure at the time (Lowery & DeFleur, 1995). The overall finding of the hearings was that violence in the media does have harmful influences but it is only a contributor not a sole causal process.

Ambitious correlation research in the UK by Belson (1978) recruited over 1500 male participants between the ages of 13 and 16. The research was designed to measure the exposure to violence that the participants had when they were younger and related this to the
self-reported violent behaviour at the time of the study. The research was carefully designed to match both heavy and light viewers using several control variables. This was done to try to remove the possibility of the spurious results influenced by these factors (Howitt, 1998). It was concluded form the research that a higher exposure to violence on the television was associated with nearly 50% more acts of serious violence than those who have had lower exposure. Based on these findings Belson suggested a series of policy changes to address this apparent relationship including the reduction of violence on television Belson (1978).

These findings would appear to suggest a clear link between heavy viewing of violent television and acts of aggression in adolescents. However, there have been some important criticisms of the research which question the methodology. Indeed, it has been suggested that the measure for exposure to violent television was seriously flawed (Howitt, 1998). It has been identified that the list of programmes presented to the participants as the measure of their exposure included items which had not been broadcast since the participants were only 3 years old (Murdock & McCron, 1979).

Another important point in the findings is that the distribution of the data when examining the exposure to violence and violent acts follows a normal distribution. This suggests that those participants who displayed the highest levels of aggression were actually the participants who watched the 'average' or medium amounts of television. This also suggests that the high and low exposure groups both showed the lowest levels of aggression (Howitt, 1998). It has even been suggested that an equally appropriate policy suggestion would be that increasing the amount of violence on television and encouraging increased viewing of it in younger people to reduce aggression. Clearly this not a serious suggestion but it emphasises
the need for caution when examining research findings. Perhaps the most striking finding is that exposure to non-violent programmes was also associated with higher levels of aggression.

The research reports spurred a large amount of research into the effects of the television in a home environment rather than the laboratory. This also included studies into the potential pro-social influences of the media. It has been suggested that over 3000 research titles were produced over the next 8 or so years. This culminated in the Television and Behaviour: Ten Years of Scientific Progress and Implications for the Eighties report which consisted of 2 volumes. This work was compiled and edited by members of NIMH. The compilation of this report began in 1979 and it was published in 1982 (UCLA Violence Report 1996). It has been suggested that this report is almost a summary of 90% of the research work which had been published during the time of the compilation. Most importantly, it did not concentrate solely on the violence issue (Lowery & DeFleur, 1995).

The findings of the research represented a shift in focus for research of this kind. It examined the other ways in which television might be harmful to the viewer. One of the main issues is the influence on the perceptions of the real world which watching television creates. This relates to elements like the use of stereotypes for groups such as women and ethnic minorities. The perception and presentation of family life is another area which has been highlighted in the research. Once again whilst this report was another important step it is not without flaws and criticisms. It has been suggested that many of the inferences are drawn from the content counted in the content analysis rather than from evidence of what that content is doing (Lowery & DeFleur, 1995). These are often based on
numerical counting of the frequency that certain prescribed categories/themes occur.

Perhaps the most publicised finding from the report was the conclusion that violence on television leads to violence in the real world (Lowery & DeFleur, 1995). The violence that children see on television will lead to more violent behaviour from the children. A decade later the American Psychological Society published a report in 1992 which also concluded that the research evidence suggests a relationship between violence in the media and violence in society in the real world (UCLA Violence Report 1996). The research into the effects of violence in the media and violence in the real world has continued over the last decade but there has been little change or development in the overall opinion of research. It is important to say that these conclusions are not universally accepted by researchers and many believe that any links are overstated and the media can make a convenient scapegoat.

There have been very similar concerns raised over video and videogames as they have developed with the latter growing in prevalence over the last decade. The debates around these media have focussed especially on violence and the effects debate. For that reason they have been omitted in any detail from this chapter.

**Pornography**

The media effects debate has been a long running and prominent one within academic research, public concerns and regulation. So far this chapter has concentrated on a selection of mediums and the respective concerns expressed regarding them. The issue of pornography has not been discussed in relation to specific mediums because it is not restricted to individual mediums. It is available in
many media forms such as magazines, videos, adult television channels, newspapers and more recently the Internet and colour screen mobile phones. This is by no means an exhaustive list of resources either. Whilst sexual imagery in films has historically been controlled by some regulation and codes of practice (e.g. BBFC codes of conduct from 1914 onwards discussed previously in this chapter), research into the possible effects and influences of viewing pornography were relatively untouched as an area for research until the late 1960s (Howitt, 1998).

However, British legislation against 'obscene' material dates back to the 19th Century with The Obscene Publications Act (1857) which first prohibited obscene and immoral materials and the sale and distribution of them. This legislation stood for many years and it was not until The Obscene Publications Act (1959) that it was updated. This Act made it illegal to publish work which might deprave or corrupt the viewer (CCMS, 2001). This new act did not actually differ greatly from the original 1857 one. There is also the problem that what constitutes something which might deprave or corrupt is somewhat open to wide interpretation. This Act was soon followed by The Obscene Publications Act (1964). This Act meant that it was not illegal to own pornographic images as long as these images were not for publishing gain (CCMS, 2001). This act was further amended in 1977 to include films (Screenonline, 2001). All of these Acts were designed to control the content and availability of these materials. This was not just with concerns for children but for all ages.

The early American research was commissioned by the Commission on Obscenity and Pornography (1970). This focussed primarily on the series of questions such as whether pornography leads to a decline in moral standards, whether pornography aroused the
viewer and whether it encouraged extramarital sex. The research findings for this work made several volumes which would be studied long after the initial publication. The overall findings of the research suggested that pornography was not problematic and that essentially (for adult use) it should be freely available (CCMS 2001; Cline, 1974). The only However, these findings were rejected by the moralistic right-wing who believed that pornography was inherently harmful and immoral (CCMC, 2001). This lead to further scrutiny of the research volumes which produced some markedly different findings to the original commission report.

A well cited example of this is that under further scrutiny it was suggested that whilst females were apparently less interested in purchasing pornography than their male counterparts, they showed little difference in whether they found penetrative sex pornography arousing (Byrne & Lambeth, 1970). This suggests that female viewers found this kind of pornography nearly as arousing as male viewers. This research finding came at a time where there was very little public awareness of women’s sexuality so it presented a rather surprising finding to many. Other findings to come out of this new scrutiny were findings such as pornography lead to an increased likelihood of masturbation (Amoroso et al., 1970). However, Howitt (1998) has suggested that unless sexuality is inherently considered to be an undesirable then these findings offer little evidence of anti-social influences.

This early research has suggested that there is very little evidence of a corrupting influence from pornography unless you take the stand point of religious groups or the moralistic. It is important to note that whilst the Commission on Obscenity and Pornography suggested that pornography was a relatively benign influence for adults it could not say the same for children. Children could not be
researched in relation to pornography because of clear ethical concerns about exposing them to this kind of content (Howitt, 1998). However, it could be said that this is evidence of an inherent concern about children being exposed to this kind of material.

The following decades saw a change in the ideological concerns regarding a variety of issues but perhaps the most dominant features were to come from the growth of sexual politics and feminism. Within this field issues about male dominance and especially sexual violence became underlying issues with regard to pornography (Howitt, 1998). It has been suggested that there was a shift in focus with regards to pornography from the morality of the individual to sexual violence. This new direction in ideology was a catalyst for research and theory about pornography and the effects that it had of the consumer.

The US Attorney General's Commission on Pornography (1986) which is also known as the Meese Commission, published in a 1,960 page, two volume report which examined the evidence from the existing research into pornography (The Meese Commission Report, 1986). Whilst the volumes provided a series of interpretations and conclusions regarding the work it contained, the overall conclusion of the report was that there appeared to be a direct causal link between increased exposure to violent pornography and violent sexual acts.

The work of the commission was not without its critics and concerns have been raised about the way in which the report used research data in constructing their findings (Wilcox, 1987) amongst other arguments which ensued. Of course the findings of the research were strengthening to the feminist position on pornography and sexual violence. However, in an earlier report commissioned in
Canada known as the Fraser Committee or the Committee on Pornography and Prostitution (1985) the conclusions drawn suggested that there was little coherent body of research on which to base any conclusions on (Committee on Pornography and Prostitution, 1985). A similar finding to the Williams Committee report (1979) which took a generally liberal attitude towards pornography (CCMC, 2001). The Williams Committee suggested that there was insufficient research evidence to conclude that there was a link between pornography and sexual violence (Williams, 1979) These would both appear to be in direct contradiction with the findings of the Meese Commission.

The Home Office in the UK commissioned researchers to examine the research evidence which had been gathered up to that time with regards to pornography. Howitt and Cumberbatch (1990) failed to find the evidence to support a clear causal link between pornography and violence toward women or children. It was suggested by the authors that only a very selective use of the research evidence could present support for this notion. It was also suggested that little evidence existed to suggest that the removal of all of this kind of material would have any influence on the levels of sexual violence. Again this finding contradicted the findings of the Meese Commission.

Interestingly research conducted in countries with a more liberal attitude towards sexuality and pornography such as Holland and Denmark have offered some interesting evidence in this debate. Indeed, Baron and Byrne, (1984) examined the sexual crime figures in Copenhagen before and after the removal of censorship. The figures suggested that these crimes actually decreased after the removal of censorship. This raises further questions about the conclusions made by the Meese Commission 2 years later.
The pornography debate is still ongoing and the development of the Internet has opened a whole new element in the debate. Primarily because the Internet offers unprecedented access to a wide range of pornography without having to leave the viewer’s own home. This can include material which would not be accepted for distribution and sale (or is possibly even illegal) in the viewer’s own country. The debate about pornography and sexual imagery was slower to gain momentum than the movement into violence in the media. The violence debate had been long running before pornography came to the fore as a research issue. However, it gained momentum quickly once the debate started.

This chapter has presented the main issues surrounding the early media and the subsequent new mediums. The violence and pornography debates are very similar in characteristics in that they are both emotive subjects and when taken as a single body, the research work has been somewhat inconclusive. In the context of the current thesis, it is perhaps more important to consider the media in relation to ‘social concerns’ rather than to the specific topics of violence and sex. This has been especially prevalent in relation to concerns about the media and children.

Summary

This review seems to point to a number of important conclusions concerning likely concerns about the new digital media:

1. New media begin to attract public and government attention once they reach a ‘critical’ mass in terms of saturation in the market. Precisely what this critical mass is, is difficult to specify especially in terms which are not medium specific. There seems
to be no tendency for new media in themselves to attract attention by virtue of being new. Concern seems to be delayed until the market demonstrates considerable use or consumption.

2. Generally concern is attracted to media which are used or consumed by children and young people. With the exception of pornographic content, which is not medium specific, few concerns are expressed about influences on adults.

3. Concern may be based on the amount of consumption of the medium but it is also dependent on specific aspects of media content such as sex and violence.

4. There seems to be an emphasis on potentially negative effects of a new medium. The positive effects of the new medium tend to be downplayed. This seems to be the case even for television where there is plenty of evidence of beneficial or pro-social effects from research.

5. Over the last century concerns have been expressed about the influences of each new medium on the consumer of it. Largely there has been little evidence of these concerns coming to fruition as the medium has matured. New technology has largely been integrated into everyday life without the prominent harmfulness that these concerns have focussed on.

6. Many of these concerns have persevered over time despite inconclusive research evidence to support them. The debates surrounding violence and pornography in the media especially are still as contentious now as they ever have been.

So what does this all mean in relation to the Internet and mobile phones? The following chapter will discuss the debates surrounding these new digital communication media and will demonstrate that the themes discussed in this chapter have persevered with these new mediums.
Chapter 3: Social Psychological Aspects of the Internet and Mobile Phones

Overview

This chapter reviews and critiques the available research into the social psychological implications of the Internet and Mobile Communications. The research base to-date is limited and as yet comprehensive in none of the areas to which the attention of researchers has been directed. Nevertheless, the following discussion attempts to identify, evaluate and describe the overriding themes so far addressed.

The Digital Media

The previous chapters have presented a historical context of the long historical debate surrounding the introduction of virtually every new mass media of communication of which this thesis construes the Internet and Mobile Communications to be recent examples. Generally speaking, new media for communications have been regarded as having adverse consequences for the social-psychological well-being of the (especially young) audience for the new medium. Consequently, in Chapter 4 the extensive research and conceptual base for psychological and social well-being has been reviewed.

The range, applications, and uses for the Internet are far wider than those of any other media. The Internet can be used for the buying and selling of goods and services. Buying over the Internet is a realistic possibility for many goods and services. TV advertising nowadays frequently provides web addresses, which contain more information about the products. Services offered online range from
support groups (e.g. the Samaritans through medical help and advice such as NHS Online) to fansites and dating. Some of these functions are possible through the use of traditional mass media, of course. The telephone, for example, can be used for help and advice. However, there are some features of the Internet which are not shared by the other media of communications (Morris & Ogan, 1996) such as the speed and efficiency. Coupled to this is the range of resources which are available online. Communication is easy via the mail service but at nowhere the speed and with the minimal delay which characterises the Internet.

The Internet clearly has a potential role in the maintenance of existing relationships. In addition, seemingly more than any other medium of communications, it offers a range of different means of forming new relationships. There is some evidence that such relationships may include romantic relationships or relationships which develop into romance (Merkle & Richardson, 2000). This can occur through the use of dating services such as AOL dating or through the use of chatrooms and other forms of ‘virtual’ groups. Relationships grow despite an apparent lack of visual cues and a shared social context that are features of face-to-face communications (e.g. Parks & Floyd 1996; Sproull & Keisler, 1991). In many cases the development of these relationships both romantic and plutonic, can be slower than their face-to-face equivalents (Daft & Lengel, 1984; Merkle & Richardson, 2000).

As the development of the new digital media has, they have, like many previous new media, been scrutinised concerning their social influence and impact. Social Psychology has been rather slow to focus on these new digital media and the early body of research, however limited, largely has come from other Social Sciences such as Sociology. Much of this limited early psychological research has
sought to understand the social processes involved in interacting via these new media (e.g. Hancock & Dunham, 2001; Morris & Ogan, 1996; Walther, 1994). This has mainly concentrated on chatrooms and message boards.

Much less attention has been devoted to e-mail (Morris & Ogan, 1996). For the most part, the research has concentrated on the processes of interaction through the Internet. Unlike the research on the introduction of the media of television and cinema, very little research attention has been devoted to the effects of Internet communication on the user. However, there is a growing body of research that has investigated the potential negative impact of these new digital media (McKenna et al., 2000). We will return to this later.

The role of gender in attitudes towards and perceptions of the new technology has been investigated. Research by Smead (1999) investigated whether there were any gender differences in the levels of aversion to computers reported by participants. Aversion was not a main response to computers and the findings suggest that male and female students differ little in this respect. This research was performed using 165 psychology students from a US university and a self-report measure of their attitudes towards computers. Nevertheless, female participants reported lower confidence in their ability to use computers. Other research has supported this finding (e.g. Morahan & Schumacher, 2000).

**Internet Communication Options**

Uniquely, the Internet has a variety of interpersonal, interaction and dynamic communication features. Online, people can choose from a range of communication methods. Perhaps the commonest is the
serving/receiving of e-mail. As we have seen, e-mail dominates the use of the Internet for interpersonal communication (White et al., 1999). Such messages are widely sent and received by most people who use the Internet. Seventy eight percent of UK Internet users are engaged in the sending and receiving of e-mail. Of these, 34% confine their use the Internet solely to e-mail. This suggests that whilst e-mail is a popular tool on the Internet not all users engage in this use. This figure may be influenced by infrequent users of the Internet who have very specific uses for the internet (such as looking for information about certain topics) which do not involve a need for e-mail. It is also possible that factors such as technological aversion or unfamiliarity with the medium are influential but not taken into account in these figures. The figures only show how the Internet is being used not for how long the user has been connected to the Internet. It is quite possible that this figure has been influenced by newer users who are still gaining technical proficiencies. It is also important to note that the use of the e-mail is not a prerequisite of Internet use just as SMS text messaging is not a prerequisite of owning a mobile phone.

In February 1998, AOL handled 28 million e-mails per day. A year later the figure had risen to 51 million e-mails daily. In other words, an annual growth of 82%. The UCLA Internet Report (2001) found evidence that a growing number of Internet users in America were reporting that they used e-mail to keep in contact with people whom they would not normally. The report also identified that 18.8% of the Internet users in the research had physically met people with whom they had first met online. Furthermore, those users also reported having met approximately six new friends in person.
Users of the Internet also reported that they spent more time socialising with their families than non-users and only slightly less time with friends. Similar amounts of time were indicated for general household activities for both non-users and internet users. Interestingly the only activity which appeared to decrease for internet users was watching the television (UCLA Internet Report, 2001). This would suggest that there is some displacement of television watching caused by the use of computers and the Internet. This has been supported by the findings of other research (e.g. Coffey & Stipp, 1997).

Internet relay chat is a system where two or more people are able to communicate through text. At the optimum, messages written are relayed virtually instantly to all individuals in the chatroom. These chatrooms are usually identified by a specific topic area for users such as specific pop group or celebrity. Examples of such chat rooms are numerous and would include the large amounts of services offered on the BBC website (www.bbc.co.uk/communicate). The BBC offers a wide range of chatrooms and message boards relating to topics such as sports, programmes and teen issues. These are moderated by a supervisor to make sure that conversations remain on the specific topic in question and that all communication is appropriate. This also includes the moderation of who is using these chat sites because of the current concerns regarding paedophilia and Internet grooming. Indeed, MSN (run by Microsoft) closed its chatroom service because of these concerns.

Chat rooms allow the option to talk to anyone logged into the chat room. A list of current participants in the chat-room is usually displayed somewhere on the screen. The conversation is displayed in a scrolling box in the centre of the screen. If one chooses to enter the conversation, text is typed in a 'text-box' at the bottom of the
screen. It is then entered usually by clicking a 'send' icon. The message then appears on the screen in the conversation box at which stage the other ('permitted') users can see it. These messages can be addressed to a specific individual(s) by adding their name(s) to the message. On the same basis, one may receive messages. In many ways this is analogous to turn-taking in conversation. (e.g. Rintel & Pittam, 1997).

However, there are less direct means of communication available:

- Message boards are much like notice boards to which anyone reading a page may reply. They do not offer immediate chat as in the Chat room. The message can be left for as long as the page exists and replies can build up. The message poster would usually check these regularly and the page is updated. Examples of these can be found at the BBC website (www.BBC.co.uk/communicate).

- Forums are mixtures of relay chat and the leaving of messages, normally. The forums are usually attached to specific websites. In a similar way to before, the visitors to a site are given the opportunity to leave messages and input for the site creator. Examples of these can be found all over the Internet (e.g. yahoo: http://groups.yahoo.com/).

**The Social Psychology of the Internet**

Having established something of the extent and scale of Internet use as far as that is possible from available resources, the question of its social psychological implications may be addressed. In this section we will:
Discuss the features of Internet communications and their limiting characteristics in terms of social interaction.

Discuss the research showing an enhancement of social interaction due to the Internet.

Discuss the research which appears to show a detrimental impact of the Internet of social interaction.

The Characteristics of Internet Communication

UK government statistics show that social interactive aspects of the net take a variety of forms (National Statistics Office, 2001). As we have seen, e-mail is by far the most used of all the communication tools. This is both for business and private use. However, the communication entered into is different from relay chat conversations in significant ways. E-mail does not mimic face-to-face communication in the same way. As and when video technology becomes more widespread, the additional interactive visual dimension that is offered will add further to the intercommunicative potential of digital media. This brings with it, additional social psychological features.

Research into the Internet and its potential negative effects or positive uses, has been wider than its social aspects that form the focus of this thesis. A growing body of research has focussed on the potential uses for the Internet in areas such as education, health care (both physical and mental) and support groups (e.g. Thompson, 1999; Winzelberg et al., 2000). The Internet is growing in importance in education and indeed, at Universities there is increasingly availability of supplementary information for courses being supplied via the university network and the Internet. Systems
such as ‘Blackboard’ include discussion groups as part of the pedagogic resources.

Most of the early research into this computer-mediated communication was conducted in research laboratories. These studies generally involved very small groups of participants who worked on tasks structured by the researcher. The research generally involved short periods of interaction (Garton & Wellman, 1995). In the typical study, the differences in the effectiveness of communication between computer mediated communication and face-to-face contact were investigated. Face-to-face communication was more effective the computer mediated communication (Kiesler & Sproull, 1992; Parks & Floyd, 1996). According to Keisler et al. (1984); Parks and Floyd (1996) computer mediated communication lacks non-verbal cues which have been shown to be crucial in communications such as vocal cues, bodily movement and facial expression.

It is suggested that computer mediated communication is far narrower in scope and richness than its face-to-face counterpart (Daft & Lengel, 1984). Theories such as social presence theory (Rice, 1987; Short, Williams & Christie, 1976) and social context cues theory (Sproull & Keisler, 1991) suggest that this communication should be less personal and conforming due to the lack of non-verbal cues. Nevertheless, Sproull and Keisler (1991) also suggested that computer-mediated communications can provide more social relationship opportunities. Reasons for this include the lower levels of apprehension and fear of evaluation in computer-mediated communication. In general, physical appearance is not currently a factor online so it removes that from the interaction. The impression you make is by what you say rather than what you look like.
The Internet and Enhancement of Social Relationships

Interpersonal networks have an important influence on the social well-being in face-to-face relationships. Broadly speaking, strong ties are associated with those people that a person has frequent and affectionate contact with (Wellman & Wortley, 1990). This may be romantic contact but not necessarily so. Bonds between the people in these relationships are strong and enduring. They contrast with weak social ties. Constant et al. (1996) suggest that weak ties characterised some of the online social relationships that were studied in their research. These were characteristically individuals linked for purposes of information exchange or for social sources that were not available in the local area. Examples of this kind of activity would be file-sharing such as music sites (e.g. Napster).

Strong social ties are those, which are usually associated with regular personal contact. They are typified by the community relationships of people living in the same household, street, or neighbourhood. These strong ties serve to provide social buffering which helps cope with life stress (Krackhardt, 1994). Indeed, the most social support (see Chapter 4) comes from those people whom a person is in contact with most frequently and inherently, with whom they have the stronger ties (Wellman & Wortley, 1990).

The question then is how socially supportive and other Internet social ties are experienced by users and the relative strength of these ties. One of the characteristic features of the Internet is the way that it allows communication irrespective of the actual physical distance between those engaging in it. Indeed, a person is in a chatroom for example, may well be communicating with people from all over the world. The process is a rapid globalisation of interpersonal communications. Because of the global nature of the
Internet, it might be expected that less importance given to physical proximity. Whether this is the case needs to be evaluated through research since the internet cannot fully replace traditional social relationships. For example, relationships over the internet cannot easily involve trips to town, dances or the theatre although it is important to be aware that online interactions can lead to face to face meetings (UCLA Internet Report, 2001; Whitty & Gavin, 2001).

Indeed, it has been suggested that there is a progression in the development of online interpersonal relationships. The progression from giving a person your e-mail address, then your phone number and eventually your address is indicative of increasing levels of trust in an online relationship (Whitty and Gavin, 2001). This trust is also linked with the ultimate goal of future face to face meetings with the person.

Early research conducted by Katz and Aspden (1997) failed to find evidence that Internet use is detrimental to socialisation. They sampled 2500 American participants of ranging from regular users to people who were aware of the Internet but did not use it. The participants closely matched the socioeconomic profiles of the USA. Interestingly the Internet users report a higher membership of leisure organisations than the non-users. However, on a range of other social relationships including their number of friendships, participation and involvement in community organisations (e.g. PTA) there was not a statistically significant difference between the users and non-users. The authors found evidence that the Internet enriches and enhances the social networks of users. Long term users of the Internet reported making on average 6 or more new friendships via the Internet. Indeed, internet use was the best predictor of how many friendships have been made. In their sample, many of the participants who had made friends online had
also met face-to-face with one or more of these people. They also found that the Internet facilitated the maintenance of family relationships and close friendships originally formed offline.

Other research by Parks & Floyd (1996) has shown that people do form relationships with people online. Anecdotes about people who have formed friendships online and are now married to the person are, seemingly, not uncommon. This is supported by research by Bruckman (1992) which showed that some of these relationships can grow into romance and marriage. This would suggest that the Internet is having a positive impact on socialisation rather than the negative effect that some researchers claim. Field research has shown that Internet users commonly report that they socialise, maintain relationships and receive support via computer mediated communication (e.g. Finholt & Sproull, 1990; Rice & Love, 1987). Other evidence about the formation and maintenance of online relationships has also been found in reports into specific online communities (e.g. Bruchman, 1992). The accounts given by the participants in these studies have shown that the users consider the relationships formed online to be as genuine and as strong as those formed in a face-to-face setting.

The Pew Internet Project (2000) involved a series of surveys of Internet users with regards to their daily activities. This research involved 6,413 participants who were interviewed via the telephone about their daily Internet use. The main focuses of this research included examining the role that the Internet had in relationship cultivation in women. Other factors were the broader patterns of use in both male and female participants. One of the main findings of this research was that the use of the Internet was associated with increased levels of social contact rather than a degradation of contact (Boneva et al., 2001; Howard et al., 2001; Johnson, 2003).
The findings suggested that there was increased contact with family members and with friends. The analysis by Howard et al., (2001) also suggested that those who have used the Internet are more likely to report that they have a large number of social contacts that they can turn to for support.

**Research Suggesting the Adverse Impact of the Internet**

Some researchers argue that the Internet displaces more valuable forms of social interaction. That is, it is believed that online social interaction is inferior to face-to-face communication in terms of its social psychological consequences and that it essentially displaces more valuable face-to-face interaction. Kraut et al. (1998) argued that there are very serious and adverse effects of Internet use, with regards to the users' personal well-being. Basing his argument on the research into social interaction which shows that, for example, the more social (face-to-face) contact a personal has, the greater the levels of personal health and happiness (Cohen & Willis, 1985; Gove & Geeken, 1977; Rook & Heller, 1997). The Internet challenges this notion because it can serve to remove users from the 'richness' of interaction in social settings by taking up their time. Kraut et al. (1998) concluded that this applied even to other members of the family household.

Kraut’s work is evaluated in detail since his conclusions are directly contradictory to the main argument of this thesis. Kraut et al. (1998) found evidence that Internet use has a very negative impact on social activity even within the household it was placed. Communication decreased between the members of the household over the year that the study took place. It was also found that self report measures of depression and loneliness showed an increase during the study period. These are measures indicative of poor
psychological well-being. The Internet, in this sense, might be argued to be socially alienating.

Such concerns about social well-being are critical in the study of the Internet. Kraut et al. (1998) suggested that these negative impacts might be through two specific mechanisms:

- The first is the displacement of social activity. This is something that has been extensively discussed in terms of TV viewing and has never really been satisfactorily supported or contradicted (Coffey & Stipp, 1997).

- The second mechanism is that Internet use displaces strong ties, such as those formed in face-to-face relationships, with only weak ties.

This study recruited 169 participants belonging to 73 households in America during their first 2 years online. The study was started in 1995 then expanded in 1996 so the sample consists of two time groups meaning that the duration of this longitudinal research was either 12 or 24 months depending on which group the participant belonged to. The initial sample size was 256 participants from 93 households but only the 169 participants completed the second stage of the research. Examples of the reasons for the decline in participant numbers at the second stage were household members leaving to go to college/university and participants who moved house (Kraut et al., 1998). Children under 10 years of age were also not included in the research. Each of the households received a computer and software, a free telephone line and free internet access (including an e-mail address) as part of this study. Participants also completed a series of questionnaires and interviews over the following 12-24 months.
The Internet use patterns of the participants were tracked as part of the research using software installed on the computers. This logged the frequency and duration of use and also the number of individual domains/sites visited each week. The number of e-mails sent and received by the participants were also logged in this research. Before the installation of the Internet and once again after 12 or 24 months (depending on when the participant started the research) each participant completed a series of measures for social involvement and psychological well being.

Social involvement was measured using four items. Participants were asked to estimate for how many minutes each day they speak to the other family members. They were also asked to estimate the number of people they socialised with at least once a month in their local area. They were also asked to do the same for people they contacted or saw at least once a year outside their local area. The final measure was the Interpersonal Support Evaluation List (Cohen et al., 1984) which is a measure of social support.

The components of psychological well being included in the research consisted of measures for depression, loneliness and stress. Depression was measured using the 15-item CES-D (Radloff, 1977). Loneliness was examined using the 20 item UCLA Loneliness Scale (Russell et al., 1980) and stress was measured using the Hassles Scale (Kanner et al., 1981). This scale requires participants to indicate how many out of a list of 49 possible daily life stressors, they have experienced in the preceding month.

The main findings of the research suggested that increased use of the Internet is associated with small but just statistically significant decreases in social involvement and psychological well being. Initial
levels of depression did not predict an increased use of the Internet but subsequent levels of depression were associated with increased Internet use. The correlation between depression at the second time of measurement and the levels of internet use was only $r = .15$ ($p = .05$) and only just attains statistical significance at the 5% levels. This finding was repeated for loneliness ($r = .15$, $p = .05$). In terms of the stress reported by the participants, there was a slight increase in the number of stressors reported by those who used the Internet more at time 2 but this was not statistically significant ($p = .08$).

When the initial size of the participant’s social circle is taken into account there was evidence that increased use of the internet was associated with subsequent declines in the size of the local social circle ($p = .05$). However, no statistically significant changes were found for the distant social network ($p = .07$). Interestingly social support displayed a negative interaction with the amount of time spent on the Internet this finding failed to attain a probability even close to being statistically significant ($p > .40$). Other findings included that teenagers used the Internet more than the adult participants which is an important trend in terms of the current research. Again, teenagers also indicated that they had extended their distant social networks more than the adult participants did.

Kraut’s research has been strongly criticised for suffering from a flawed research design and in terms of methodological details (e.g. Shapiro, 1999, Silverman 1999).

Among the criticisms are the following:

- In the article by Kraut et al. (1998) the authors identify that participants moved away or left for college/university during the
research. However, when discussing the changes in social circles they do not acknowledge the influence that such activities may have on their conclusions (Shapiro, 1999). The sample consisted of families where during the period of the research some of the family members will have finished school and inherently had a decrease in social circles. Indeed, some of them may have moved away from home completely. This also has implications for the parents because if a child moves away from home then it is likely that the parent’s social circles decrease slightly.

- Shapiro (1999) also identified that the second (and later) of the samples was taken from members of a board of directors for local community organisations which are a group inherently high in social connections to the community. She suggests that it is possible that the declines in social involvement could have resulted from ‘regression to the mean’. This is when groups selected for being a high value on a variable show a tendency to decline (regress) back towards more average levels over time. Indeed, the changes found in the study could be due to random fluctuations in social involvement resulting in a decline irrespective of access to the Internet.

- Another criticism which has been suggested is that the use of a true experimental design incorporating a control group condition would have been a better design for the research (Shapiro 1999).

- Other criticisms for the design have focussed on some of the measures included in the research. Indeed, Rierdan, (1999) has suggested that the CES-D scale measures more than just depression and that it is sensitive to other measures of distress such as demoralisation which is not a direct criticism of the measure. More importantly, she has suggested that the weak
evidence in the findings fails to show that the participants became clinically depressed as a result of using the Internet.

- The findings reported in the article concern relationships that are barely statistically significant, if at all despite a fairly substantial sample size. Hence they are subject to concerns about their substance and generality. In the light of this, claims about the negative social impact of Internet use seem need to be regarded with some caution. For example, the correlations in the research of Kraut et al. (1998) were very often very weak. The relationship between depression and Internet usage was as not strong \((r = 0.15, p = .05)\). The relationship between family communications and duration of Internet use was also very low \((r = -0.09, p > .05)\) which is not statistically significant. Furthermore, the relationships between the social support \((r = -0.04, p > .05)\), loneliness \((r = 0.15, p = .05)\) and stress \((r = 0.04, p > .05)\) are all very weak. Expressed, as a percentage of the variance explained these correlations range from only 2.25% to as little as 0.16%. In terms of 95% confidence intervals, a correlation of 0.15 has a range from -.02 to .28 for this sample size and a correlation of 0.04 has a range of -.04 to .08. It is questionable, then, whether the size of these relationships warrant the level of concern about the adverse impact of the Internet promoted by Kraut et al. (1998).

It is likely that how the Internet is being used and why, is an influential factor in any supposed influence from Internet use. Indeed, the Internet can only provide support and/or communication if the user actually engages in these activities. An extrovert is likely to be more 'outgoing' and therefore develop wider social networks than a quiet introverted person. This may still be true for the Internet despite the suggestions that the nature of
Internet communication can lower inhibitions and concern over physical appearance (e.g. Rheingold, 1993). An introvert in face to face communication could still be an introvert in online communication.

There is other research which claims to show a negative impact of the Internet. Weiser (2001) investigated the social and psychological influences of using the Internet. The research consisted of two studies. The first study involved a sample of 1,419 college students and other Internet users who completed a survey about their attitudes to the Internet. The second and larger study consisted of a sample of 2,435 participants. This sample included the participants from the first study. In the second study the participants completed measures of personal and professional Internet use; Internet attitudes; community and social involvement; social support strength; loneliness; depression and life satisfaction. The findings suggested that certain types of Internet use (such as work uses) were associated with declines in psychological well being. However, using the Internet for the acquisition of goods and knowledge was actually associated with increased psychological well being.

More research by Ofosu (2001) has suggested that internet dependence is associated with increased social loneliness and dissociation. The research recruited 211 undergraduate students as participants. The participants completed several survey-based measures investigating concepts such as social/emotional loneliness, shyness, Internet dependence and social support. The high users tended to be male. These participants also perceived less social support from their offline social network but indicated more support from online friends. These participants also indicated higher
levels of shyness, social loneliness and dissociation than those classed as non-dependent.

**Research Suggesting the Positive Impact of the Internet**

It is important to note that it is not just potentially negative impacts of using the Internet which are being found in research. Silverman, (1999) reported that membership of online communities actually contributes to psychological well being. Indeed, several of the previously discussed studies have also reported positive influences coming from Internet use.

Two opposing views in the debate about whether or not the Internet has positive or negative implications for social interaction/well-being should be considered:

- One side of this debate suggests that the Internet can only produce an illusionary representation of community and social interaction (e.g. Stoll, 1995). The relationships formed in this illusionary environment are shallow and impersonal. They even go as far as to suggest that these relationships are often hostile.

- The opposite side of this argument suggests that the Internet and computer mediated communication actually serves to liberate the user from physical constraints. These constraints are ones such as locality/proximity, race, gender, and physical appearance. It is argued that these are new relationships but are equally as genuine as those formed on a face-to-face basis (Rheingold, 1993).
It has been claimed that the Internet does not pose any kind of social 'danger' though it may be problematic for certain sectors of the community who are already socially constrained. For example, those who misuse and abuse it (and neglect other social activity) may be the ones at risk of their loneliness and isolation being reinforced by their use of the Internet (Sher, 2000). Parks and Floyd (1996) suggest that the reduction in the cues in computer-mediated communication does not mean that the conveyance of personal and relational cues cannot happen. It may be that it merely takes longer for the cues to develop effectively in Internet communication compared to face-to-face interaction. One study has found that the socio-emotional content in these computer-mediated interactions is higher when time constraints were not placed (Walter et al., 1994). So the evidence of the negative impact of online communications found in some research may be an artefact of the fixed and rigid time constraints imposed in these studies.

**Romantic Relationships**

Romantic relationships are held to be among the closest and most satisfying forms of human interaction so the role of the Internet in the development of these is important to consider Conventional theory suggests that proximity and regular interaction are critical in the development of romantic relationships (e.g. Berger & Calabrese, 1975; Kelley, 1979). Another factor in the development of romantic relationships is the importance of physical attraction and appearance (e.g. Berscheid & Walster, 1978). That is something that cannot be conveyed at the first meeting via a text based communication device. It is possible to attach pictures to e-mail and send them that way but that cannot come prior to the initial
meeting online. Unless the contact is made through an online dating agency, which has pictures of people to choose from before, you get in contact.

It is now possible to use ‘web-cam’ cameras to have real-time video conversations via the Internet. It is restricted by several factors such as the speed of the Internet connection and the computers. Computer mediated communication has developed ways to counteract the current lack of cues, both visual and aural, presented by using text-based communication. These include the use of graphic illustrations of emotion called “smileys”. It is not uncommon for “:o)” to be used to represent a smile or “;o)” to represent friendly teasing. These are substituting the cues such as facial expression and tone of voice that are missing from text-based communication (Parks & Floyd, 1996). This enables the person to show humour so that it lessens the chances of the recipient misinterpreting the meaning of a comment and being offended.

The users of online groups/chatrooms have also found other ways to counteract the lack of cues presented by this form of communication. The telephone, letters, and in some cases actual face-to-face meetings supplement the online communication in some cases (Ogan, 1993; Rheingold, 1993).

Parks and Floyd (1996) also provide important information concerning relationships and gender. An Internet-based survey found that in their sample 72.2% of women had formed a personal relationship with someone online whereas the figure was only 54.5% for men. It was also found that same sex relationships were slightly less common (44.9%) than opposite sex relationships (55.1%). However, this did not reach statistical significance. Most of the relationships reported in the research were less then a year in
duration at the time of the survey (69.6%). Only 7.9% of the relationships had any romantic connotations. Contact between the two parties was reported to be predominantly weekly (55.4%) although 29.7% of the participants reported contact of 3-4 times a week.

It is important to note that this research was carried out using participants from online newsgroups and the newsgroups are a social activity. A news group operates just like a bulletin board. It would be anticipated that those people communicating via these would be engaged in social communication. It is also more likely that they will have formed online relationships. The trends found in the research are likely to be exaggerated by these factors. It is however probable that some of the trends in the data are reflected in the Internet community as a whole.

**Mobile Communications**

The growth of mobile communications has been immense in the last decade. As was discussed in Chapter 1 mobile phone ownership is very big business and there is a large market for the companies. Whilst research and design in an aesthetic, ergonomic and marketing sense has thrived, mobile phones as a social psychological issue has barely been touched by academic research. What research there is appears to concentrate more on the potential health issues concerned with the use of the mobile phones.

One of the other main fields of research into mobile phones has been the influence of using a mobile phone whilst driving (e.g. Haigney & Westerman, 2001; Haigney *et al.*, 2000). Concerns about
the increased risk of accidents whilst driving using a mobile phone have lead to the banning of the use of hand-held phones whilst driving in the UK. Whilst each of these concerns are valid and require researching in the relevant fields, generally they have little bearing on the social psychology of communications.

Among the most interesting questions raised about mobile phones is the possibility of a relationship to smoking in teenagers. Charlton and Bates (2000) hypothesised that there may be a link between the declines in teenage smoking in the UK and the increase in mobile phone ownership. The authors suggest that mobile phones could offer similar social functions to cigarettes such as individuality, adult style, peer group bonding. It is important to note that there is currently a lack of empirical evidence to support or discount the hypothesis offered in this article. However, the hypothesis is interesting and is worthy of further research.

One novel phenomenon which has recently occurred is that a 13 year old child handed in a school essay written in what is known as 'text speak'. This is essentially an abbreviated way of writing which is employed when using SMS text messages. This has formed primarily in response to a SMS text message being restricted in length to around 160 characters. Examples of this 'text speak' would be “ru ok?” and “wotz 4 t?” referring to “are you ok?” and “what is for tea?” respectively. The child wrote a whole English essay using this kind of writing style which has lead to concerns by teachers and parents that mobile phone use for SMS text messaging in children may harm their writing and language skills (BBC, 2004). It is difficult to tell whether incidents like this are commonplace but it is likely that they are currently rather rare.
Current development in what is known as 3G mobile phone technology is providing the availability of short video messages with sound between handsets which support this feature. This adds an extra visual dimension to the communication via mobile phones. This technology is still in its relative infancy but all of the major mobile communications networks and manufacturers are developing these products and services. Most current mobile phones offer the use of built-in or clip-on cameras and the ability to send colour pictures with messages between suitable handsets.

Conclusions

The lack of research into mobile text communications relevant to the present thesis should be noted again here. The research literature that is available is very small and has concentrated on the potential medical effects of the mobile phone. These have centred on the debate about the possible links between mobile phone use and brain tumours. This, once again, highlights the need for research into the social psychology of text-based mobile communications. The same applies to the Internet. There is an expanding research base into the Internet. As the phenomenon has grown so has the interest and concerns over the psychosocial effects of Internet usage. There is a very clear lack of is good, well designed research. Much of the research has failed to investigate the broader issues to do with Internet use.

What is clear from this review is that there are many unanswered questions arising from Internet and other digital technology for Social Psychology. There would appear to be a need for up-to-date research into the social psychological impact of digital technology to take into account the currently near-universal use of these media in some sections of the community.
Summary

There is a distinct lack of social sciences and social psychological research into mobile digital communication. It is clearly a social medium because of the huge profits of the providers and use figures as discussed in Chapter 1. The instant availability of contact has implications for socialisation and the availability and provision of social support. Any interactions between mobile phone use and psychological well being are yet to be studied and this will be one of the issues for the current research. The following chapter presents and discusses the concept of social support and its relationship with psychological well being.
Chapter 4: Social Support and Psychological and Social Well-Being: Definitions, Research and Theory

Overview

This chapter presents and discusses the concept of social support in relation to psychological well being. Psychological well-being is discussed in terms of a series of its components. This includes loneliness and depression. As the previous chapter has presented, concerns have been expressed about the potential influence of using the Internet on these components of psychological well-being.

Social Support

The term ‘social support’ entered the psychological literature in the 1970s (Wilcox & Vernberg, 1985). The concept attracted a great deal of research interest in the intervening years although, recently, research interest has declined relatively. New research and ideas have been sought but major developments in the concepts have not been made. A number of different definitions have been offered which vary greatly in focus and content. Albrecht and Adelman (1987) defined social support as “verbal and non-verbal communication between recipients and providers that reduces uncertainty about the situation, the self, the other, or the relationship and functions to enhance a perception of personal control in one’s life experience” (p19). This indicates that social support is important for a positive perception of life experiences.

It is about communication between people which provides information to clarify various aspects of the social situation. Similar definitions are provided by Burgoon and Ruffner (1978) and Cappella (1981). While still emphasising the importance of
information, Cobb (1976) suggests that social support is a more particular sort of information. He argues that social support is "information leading the subject to believe that he (sic) is cared for and loved, esteemed and valued, and belongs to a network of communication and mutual obligation". (Cobb, 1976. p300). In other words, social support is information about one's worth in the eyes of others and confirmation that one belongs to a social network.

Definitions of social support tend to be 'circular'. They claim, for example, that 'support is purely the behaviour of being supportive' (Wilcox & Vernberg, 1985. p4). Thus it is not possible to identify the actions which are socially supportive from the social support which they provide. That is, the contents of socially supportive communication cannot be identified without reference to their effect. This lack of clarity about what communications or information are socially supportive makes application of the concept and its development difficult.

**Functions of Social Support**

The definition offered by Albrecht and Adelman (1987) intimates social support is a multi-dimensional phenomenon. Any approach to social support which overlooks its multi-dimensional nature may be inadequate. Consequently, research (e.g. Mutran et al., 2001; Wilcox, 1981) has sought to develop the multi-dimensional features of social support. A number of theories have sought to identify the major dimensions of social support (Wilcox & Vernberg, 1985). While the terminology may vary, there seems to be an underlying agreement over what these dimensions. A number of psychological scales have been constructed to be sensitive to these different dimensions. Among the dimensions which have been identified are
emotional support, esteem support, network support and informational support.

What do these major dimensions of social support refer to? What sort of social behaviour do they refer to. We will consider the four in turn:

- *Emotional support* is that given in times of emotional need (e.g. a relationship break up) by those within your social network.
- *Esteem support* serves to buffer and maintain levels of self-esteem in the receiver (Cohen & Wills, 1985).
- *Network support* is a more macro level concept which refers to the support offered by a persons' social support network. This support can include aspects such as the size, availability and proximity of the network to the receiver. (Antonucci & Depner, 1982).
- *Informational support* is somewhat self-evident. It is the help given in defining, coping with and understanding problems. Information relevant to a life problem may be crucial in helping the recipient cope.

There is clearly the possibility that digital communications including the internet may help with social support of all of these types. For example, the text message may be seen as being symbolically evidence of networking and the contents of messages may be evidence of emotional support at times such as examinations or other significant life events. Information support can be seen in action in the area of illness and diagnosis for example. The Internet has provided a faster and more efficient way of providing informational support (McCormick & McCormick, 1992). There are many 'help' and 'advice' related websites on the Internet, including ones related to the National Health Service (NHS). The principle
behind informational support (and social support in general), especially with regard to these 'help' sites is that increased knowledge decreases uncertainty, which reduces stressor factors such as anxiety, depression and loneliness (Cohen & Wills, 1985).

All of these categories are inter-linked and are not totally separable. Some research has shown that even the naming of the categories of support can overlap somewhat (Cohen & Wills, 1985). Indeed, in the context of everyday communication it is very difficult to distinguish which form of social support is being considered. For example, if a friend says that their father recovered from cancer, this maybe regarded as informational support, emotional support, or network support when addressed to someone distressed over their father being diagnosed as having cancer. Research has shown that there is a strong inter-correlation between these dimensions of functional support, which further demonstrates the links between the different types (e.g. Norbeck & Tilden, 1982; Wethington, 1982). In particular, esteem support and informational support have been found to be highly inter-correlated (Norbeck & Tilden, 1982).

Whilst it is important to identify the major dimensions of social support, in themselves they do little to address the question of what social support actually is and how it is created/maintained. Research (e.g. Gottlieb, 1988) has identified that there are a series of factors that are important to social support. In terms of network support, these factors include the size of the social network, the density of the social network, the number of available people to confide in, and the personal characteristics of both parties in support.
Social Networks

A social network is the 'spine' or skeleton upon which social support is built. Social networks and social support are not the same thing of course (Thoits, 1992) but social support without a social network is generally not possible. Social support operates through the social network. Broadly a social network is the primary group of people in a persons' life. This network will consist of members such as family, friends and colleagues. However, not all of the members of this network have the same strength of bonds or ties with the person (Laireiter & Baumann, 1992). Someone who you have just met is not likely to carry the same importance or strength of bond as for example, your mother or father. The social network therefore consists of members who have unequal importance to the 'owner' of that network. Equally, the 'owner' of a social network will function as part of the social networks of its members (Thoits, 1992). Others in the network will have social supportive interactions with each other. Hence the term 'networks'.

The social network is not invariably a positive influence. While those with the larger social networks might be expected to have the greater amount of support in times of stress, social networks require maintenance which can be a stressor in its own right (Hall & Wellman, 1985). Conflicts in the social network have shown to have a negative influence on the social support and well-being of the individual (Barrera, 1981). This suggests that the potential negative impact of social networks may temper their positive contribution to social support. The supporting literature for this view is limited. Conflict between members of one's social network is clearly not an indication of supportive behaviours (Cohen & Wills, 1985).
Support as a Buffer

Social support gained from one's social networks may be varied in a number of aspects as we have already seen. The extensive research in this field has suggested that social networks 'buffer' the individual from the uncertainty of everyday lives (Argyle, 1992). Buffering comes into play only when something important is a problem. In these circumstances, the lack of support has an impact (Schwarzer & Leppin, 1992). The term 'buffers' refers to the influence of the social network in reducing the potentially negative impact of stressors in our lives. This occurs when a stressor arises that cannot be immediately dealt with by a person's coping strategies (Lazarus, 1966).

On its own, a single stressor may be insufficient to impact negatively on the individual. If there is an accumulation of stressors then these can have an effect on the psychological well-being of the person. This can manifest itself in a number of ways and illness can often be the result (Cohen & Wills, 1985). For example, there is evidence that stress related illness has increased over the past two decades with the increasing demands placed by work and general lifestyle. It was estimated that stress related illness costs 13.5 million lost working days per year in Britain (HSE, 2001).

Research suggests that the strength and size of the social support network has a direct effect on the ability of the individual to cope with issues in their lives (e.g. Berkman & Syme, 1979; Schwarzer & Leppin, 1989). That is, buffering is directly related to the strength and size of the social network. Furthermore, the different sources of the support can have an influence on the type and effectiveness of the support (e.g. Argyle, 1987; Brown & Harris, 1978). Much
research has focussed on the implications that supportive social networks present for the psychological well-being of individuals. There is a well established positive relationship between social support and mental health (Cohen & Wills, 1985). The more social support that is available, the better the outcomes are likely to be regarding the person’s mental health (e.g. Billings & Moos, 1982; Henderson et al., 1981).

Social support tends to be found in a network in relation to specific stressor events that have affected the persons’ life. ‘Buffering’ occurs when the social network provides responsive support appropriate to the nature of the stressor (Cohen & Wills, 1985). Success of buffering and social support is determined by features such as the proximity and ease of access to the support givers.

**Main Effect Model**

A major influence of an extensive social network is in providing frequent and positive experiences with other people. These interactions are rewarding for the individual within his or her social support network (Cohen & Wills, 1985). The potential stability and positive feedback provided is likely to have a direct positive effect on the psychological well-being of the person receiving it. Some researchers (e.g. Schwarzer & Leppin, 1992) suggest that social support can prevent or at the very least diminish the impact of stressors. It is not only psychological well-being that has been linked to social support. Actual physical health benefits have been identified in relation to social support (e.g. Jemmott & Locke, 1984).

Lack of social support coupled with prolonged stress has been linked to the increase in neuro-endocrine responses and the suppression of immune system functioning (Cohen, 1988). This clearly has
implications for physical health because reduced immune function is associated with vulnerability to a variety of physical illnesses. Strong social support may inhibit the neuro-endocrine reactivity and consequently lead to improved immune functions. Indeed, research has been conducted into the influence of social support of diseases such as AIDS (e.g. Namir et al., 1989) and cancer (e.g. Dunkel-Schetter, 1984). Generally, the research findings show a positive relationship between social support and physical well-being.

This effect is strongest in the bonds between family members. The social support offered by friends does not have the same influence on physical health (Argyle, 1992). Chronic illness and the health effects are minimal in the friendships but there are still other well-being influences due to social support.

Social support in Close Relationships and Friendships

Friendships: The influence of social support depends on its type and strength. Furthermore, it may depend on the relationship between the receiver and the provider of the support (e.g. Argyle, 1992). In relation to the mental health, a number of studies have supported the view that there is a major effect of the network of friends and neighbours on well-being. Some research has gone as far as to claim that the social support network provided by friends has an effect on mental health at all levels of stress (Williams et al., 1981).

The influence of the social support of friends on well-being may be based on the principle that friendship provides enjoyment due to being in contact for conversation and leisure (Argyle & Henderson, 1985). Research by Wellman (1985) identified clusters of different
sorts of social support in relation to both friendships and family. Five broad categories seem to exist:

- Informational support, which serves to provide information and knowledge through support offered by, for example job contacts.
- Services support was the next form of support that was outlined. This takes the form of helping behaviours offered by home help or general everyday help. This could take the form of help with the maintenance house, car etc. It is a very practical form of support.
- Companionship is a very important part of the social support offered by friendship because it provides the person with the opportunity to discuss problems and potential problems. It also allows the person to have positive contact and feedback from peers within their social network.
- Emotional support was identified as being one of the clusters of support. This support takes the form of support offered at the time of emotional disturbance (e.g. the break up of a relationship or the death of someone close).
- The final cluster that was identified was the role of financial support. This is very much self-explanatory. It is the knowledge that this kind of support is there should it be needed.

Friends affect the happiness and mental health of a person. One of the principle mechanisms through which this is achieved is the positive feedback offered by these relationships. Research has shown that participants were the most ‘joyful’ when they were with their friends (Larson, 1984). This emotion was stronger for friendship than it was for family relations or being on one’s own. It was also shown to be the most influential for the young and for the old. Indeed, some research suggests that close friends will often be more concerned about the needs of the person than they are about
their own rewards and the 'costs' placed upon them by this supporting role (e.g. Clark & Reis, 1988).

Specific aspects of the support network offer very specific kinds of support. In the workplace, for example, even just having one friend at work can have a positive buffering effect on work related stress (Argyle & Henderson, 1985). For nurses who work irregular hours, social support at work (provided by friends, colleagues and supervisors) has a direct influence on their well-being. The more support that was offered or received in the workplace generally had a relationship with increased psychological well being. Possibly this is a consequence of the fact that the nurses were not able to spend as much time with their families because of their working hours (Brand & Hirsch, 1990).

People who are in employment, in general, are more likely to have higher levels of psychological well-being (Banks & Jackson, 1982). In a large sample of school students, those who left school and failed to find work displayed an increase in the levels of psychological distress (a deterioration in the psychological well being) compared with those who found work upon leaving school. It is important to note that this research does not satisfactorily take into account other possible influences on the well being of the participants. Things such as life events and the fluctuations in the size of the social networks throughout life may have an influence.

**Romantic Relationships:** The basic principles that have been outlined as this chapter has progressed are most sharply illustrated in relation to close relationships. Strong relationships have again been shown between being in a close relationship and the general levels of mental and physical health (Cramer, 1998). One study found evidence that being happy marital relationships was
associated with lower levels of mental illness. On the basis of their data, the researchers went as far as to suggest that this had a direct effect on mortality (Berkman and Syme. 1979). Participants who were not married but had large social networks were approximately equal in their mortality rated to those in happily married relationships (Cramer 1998). However, the research did show that when all the measures in the research were combined, those participants who had restricted social networks and low levels of support were more than twice as likely to die than those with high support. However, many factors were not taken into account by these researchers which may have influenced the findings. Important among these is the actual physical health of the person. Those in poor physical health may find it difficult to create and maintain social networks. In these circumstances, it may be a scientific 'leap of faith' to assume that social networks actually increase the longevity of life on their own.

The research into the long-term influences of marital status and mental health has not been totally consistent (Cramer, 1998). Longitudinal research suggests those who are in a marital relationship have lower levels of anxiety and depression at the original time of measurement as well as four years later in the follow-up (Thoits, 1987). Participants in the research who were not involved in marital relationships at either time of measurement had higher levels of anxiety and depression. Only widowed people showed no statistically significant difference to the married participants.

Despite this, Kaplan et al. (1987) failed to find supporting evidence for these findings. In a massive nine-year follow-up study using 6,928 adults, no relationship was found between depression and marital status after controlling for factors such as the initial
depression levels, age and physical health were controlled for. This was further supported by the research of Oxman et al. (1992). In a three-year follow-up study using 1,962 sixty-five year old participants, only the participants who had been widowed in the period between the first measure and the second measure showed different levels of depression to the married sample. This was again once other factors such as the initial depression levels, age and physical health were controlled for.

The Importance of Weak Ties

So far there this chapter has presented the broad literature base around social support and its impact on the individual. This has been taken from the perspective of friends, relatives and romantic partners. This reflects the priorities of bulk of the research literature into social support (Cowen, 1982). This belittles somewhat the potential role of those to whom we have only weak ties or bonds. Such weak ties involve “a wide range of potential supporters who lie beyond the primary network of family and friends” (Adelman et al., 1987; 126). These ‘supporters’ offer an extension to the social network provided by immediate friends and family.

The friends that a person has as they progress through life are likely to change and develop. The friends that a person has in mid-life are likely to be different to those who they had as a teenager. A person will not have strong ties to someone they have just met but they can develop over time. Critically, all social ties and bonds were once weak (Adelman et al., 1987). Friendships both develop and drift apart. As the social network changes, those to whom we have strong ties may be replaced by those with whom the ties are weaker. Social networks should not be regarded as fixed. They are
constantly developing with new members entering and older members leaving.

Certain circumstances reduce the availability of members in a social network. Divorce is a good example because it is likely that several members of a social network will be lost when this happens (Eckenrode & Gore, 1981). Indeed, these weak ties can be very effective when stronger ties may be unable to provide support (e.g. the death of a family member or divorce). Geographic limitations and situational factors can have a strong impact on the availability of strongly supportive members of the network (Shuval, 1982). Life events such moving house, changing job or leaving home to go to university will all have an impact on the availability of strong ties.

Some people may actively avoid the development of strong ties with others because of a desire to be independent or self reliant or even for the "desire for an eccentric lifestyle" (Adelman et al., 1987; 128). In such cases, weak ties can often be desirable because they offer the potential to counteract the constraints of strong ties. Strong family influences have been linked with the potential for inhibiting the seeking of professional help in times of need (Horowitz, 1977). The family members might discourage the seeking for help because they want to deal with the matter within the family.

Social relationships with strong ties generally develop through mechanisms of interdependence, intimacy and other functional components of mutual interactions. (Adelman et al., 1987; Parks & Floyd, 1996). It is therefore not surprising that the social relationships, which are built on weak ties, demonstrate lower levels of these mechanisms (Kelley, 1979). Social relationships based on
weak ties require less work to maintain and the more superficial nature of them makes it easier to seek support from.

Those people to whom an individual will have weak ties are generally external to the main body of the social network (Granovetter, 1973). In other words, those with strong ties to a person tend to know each other; those with weak ties to a person tend not to know each other or anyone else in the network for that matter. The density of part of the social network varies depending on whether the members of that part have strong or weak ties to the individual. Parts of the network involving strong ties tend to be larger than those where there are weak ties. This has several important implications for the social well being of the individual.

So acquaintances with whom we have weak ties tend to be isolated from those with who we have strong ties. This obviously restricts the flow of information since those with whom we have weak ties cannot spread information to our most intimate friends and family. In circumstances where a person has things that they do not want to tell their closest friends, they may be more comfortably sharing it with less close acquaintances. This is due to the reduction of uncertainty facilitated by the weak ties. We do not have to deal with the uncertainty about the way that members with strong ties might react. In many ways, it could be suggested that there is less to ‘lose’ if the response to the information is negative.

Weak ties can also provide information that is not available from within the central parts of the social network, a group of members (such as work colleagues) might be able to provide certain information. However, someone outside of the intimate group might be able to provide different but important information that cannot be supplied by intimates. These interactions tend to be done in
context specific places. A person is likely to only see the doctor in the surgery or certain people at their place of work (e.g. staff at shops to whom a person chats).

This can now be extended to include the new digital media, which will be discussed in Chapter 4. Suffice to say here that weak social ties are not necessarily unimportant social ties for the wellbeing of individuals. So no necessary conclusion should be drawn that weak social ties via digital media are unimportant or in some way 'second-best'.

Social Support and the Components of Psychological Well-Being

The term psychological well being is a blanket term which covers a number of different functional components such as depression, anxiety, stress, loneliness and self esteem. This is by no means an exhaustive list of the components of psychological well being. The current research has focussed on depression, anxiety, stress and loneliness as the components for investigation. The reasons for their inclusion will be discussed in relation to the digital media (see Chapter 3) and in terms of the research design (see Chapter 6) later in this thesis. The previous research literature into social support and psychological well being has identified a series of interactions (e.g. Makosky, 1982). The interactions between social support and these psychological well being variables will be discussed in turn.

Stress/anxiety: Stress and anxiety are similar concepts and can have similar symptomatic characteristics (Tucker-Ladd, 1996). Interestingly the symptomology for these is more associated with physiological effects brought on by the underlying psychological
processes. This symptomology can be effects such as stiffness, irritability, restlessness, frequent urination, sweatiness, tiredness and in the case of anxiety, a mental pre-occupation with events.

Stressors in life can threaten the psychological well-being of a person (Makosky, 1982). Stressors can manifest in a number of forms although one of the primary stressors is change (Tucker-Ladd, 1996; Makosky, 1982). The greater the change (or numbers of changes) increases the likelihood of increased stress levels (Makosky, 1982). Changes of all sorts can act as stressors because they require the person to adapt and accommodate whatever that change may be. Seyle (1982) identified that family bereavement is one of the greatest stressors that can happen. Sarason (1972) identified taking tests as being another common stress-inducing activity. This is especially relevant to the educational context. It is not just the big stressors such as bereavement which can precipitate stress. Daily hassles have been suggested as being a larger influence on mental and physical health than occasional big events (Lazarus & Folkman, 1984).

Anxiety can often be co-morbid with other components of psychological well-being. Depression and loneliness have been identified as being commonly associated with diagnosed anxiety disorders (Edelman, 1992). Anxiety is a multi-dimensional factor which can be exhibited in many ways. It is important to be aware that not all stress or anxiety can be classed as a clinical condition. The severity of the stress or anxiety dictates whether it could be classed as a clinical problem. The presence (or lack) of factors such as social support can influence levels of anxiety and stress.

There is an implicit supportive role played by the members of the social network (Burelson, 1990). The existence of social
relationships is in itself supportive so inevitably may play an important role in the maintenance of an individual’s well-being (e.g. Cobb, 1976). This conceptual and implicit link has been contested since research has found that social relationships can be harmful and can have negative impacts (e.g. Rook, 1984). This negative impact may be through mechanisms such as negative reinforcement, negative outcome of seeking support and the failure of support to be mobilised in times of need. It has also been suggested that involvement in social networks provides increased possibility for negative life events such as the death of friends and social conflicts (Cohen, 1992).

Social support can reduce the impact that stress and anxiety on an individual (Argyle, 1992). The mechanisms for this were outlined earlier in this chapter. Both the presence and absence of social networks can affect on a person’s ability to cope with stress in life. Stress can arise from situations such as work, finances, and relationship and emotional problems. Social support may have a critical influence when a stressor cannot be dealt with by the coping strategies of the individual (Lazarus, 1966).

Social support can operate as a ‘buffer’ for stress which occurs in the life of a person (Cohen, 1992). It has been suggested that the buffering provided by social support is most effective when the support available is suited to the needs of the stressor (Cohen & Wills, 1985). If a person found themselves out of work then a friend who could help them out financially would be an effective source of support. However, this person’s ability to help financially would be less helpful if the stressor had been the death of a friend and consequently the buffering influence of the social support would be less.
Stress is not the only psychological and social state which is related to social support and well-being. We can turn to these now.

**Loneliness:** Loneliness is often marked by a sense of isolation from others (Jones, 1985). The concept of loneliness in social psychology shares characteristics identified in relation to the broader concept of social support. Central to both concepts is the idea that intimate and social relationships are vital for the functioning of individuals within society (Jones, 1985). Indeed, Jones (1982) defines the occurrence of loneliness as being where “one’s network of casual and intimate relationships is either smaller or less satisfying than one desires” (cf. Jones 1985, p. 226). Indeed, the lack of social ties has been linked as a cause for the development of emotional distress (Rook 1984). Central to the concept of a relationship between loneliness and social support is the idea that, via the mechanisms of social support, an individual will be less likely to develop the symptoms of loneliness.

Interestingly, research has identified college students as being a particularly lonely group despite the apparently large opportunity for social contact, relationships and love (Jones, 1985). There is a body of literature which has offered support for this assertion (e.g. Brennan, 1982; Horowitz et al., 1982; Van Buskirk & Duke, 1991). Indeed, Rokach and Brock (1997) examined the experience of loneliness at several life stages. The research concluded that the experience of loneliness in 13-20 year olds differed from loneliness experienced in adulthood or subsequently old age.

It is likely that there were other factors that had an influence on the findings of the research – such as the young age of students. Lonely people will generally have poor interactional skill with others and more apprehension and negativistic attitudes to socialising (e.g.
Solono et al., 1982). Lonelier people tend to be less competent at decoding non-verbal cues in conversation and lack confidence in disclosing intimate information (Gerson & Perlman, 1979).

Certain activities have been associated with periods of loneliness. Reading, listening to music and (most importantly for communications research) calling a friend were identified as being the main responses to loneliness in 50% of people (Rook & Peplau, 1982). Loneliness has been linked to a number of negative feelings and behaviours such as suicide, alcoholism and psychosomatic illness (McWhirter, 1990).

It is difficult to separate loneliness and social support in a way that leaves the relationship between the two clear. Lonely individuals may lack confidence in their social networks or have different expectations of relationships from others. It is difficult say whether lonely people are lonely because they lack a large social network or lonely people avoid attracting a large social network (Jones, 1985).

Loneliness is not being alone. Indeed, it has been suggested that many people actually enjoy periods occasional of solitude (Tucker-Ladd, 1996). Loneliness is often accompanied by feelings of depression (which will be discussed next). Indeed, it has been suggested that loneliness can contribute to depression. It has also been suggested that loneliness lowers self-esteem which in turn increases feelings of loneliness in a cyclical way (Tucker-Ladd, 1996). Both are suggested to contribute to depression (e.g. Freden, 1982).

Depression: There are a wide variety of definitions and experiences of depression (Greenberg et al., 1988). Beck, (1967) suggested that depression is the result of a negative view of ones
self. This could be such as feeling of inadequacy or deficiency. It can also be responsive to negative life events and stressors (in a similar way to stress/anxiety). Beck also suggested that these feelings were accompanied by the feeling that the person is responsible for the way things are. Abramson et al. (1978) suggested that depression was more characterised by the feelings that expected and desired outcomes are unlikely to happen and negative outcomes are likely to occur. In this sense, depression would be characterised by feelings of helplessness, low self-esteem and in some cases a suicidal ideation (Hammen, 1997).

A number of different classifications of depression are made within clinical psychology. The DSM-IV (American Psychiatric Society, 1994) contains multiple clinical depression disorders such as bi-polar and uni-polar depression. These are clinical definitions for diagnosis and treatment and as such refer to clinically high levels of depression. As with loneliness, the experience of depression can vary between different people (Freden, 1982). Also the actual stimuli for the feelings of depression can vary to. Loss has been identified as a factor which influences and may precipitate depression (Tucker-Ladd, 1996). Other factors which have been identified as having a potential influence on the levels of depression include relationship problems, chronic illness, work stress (Psychology Online, 2001). It is important to stress that not all depressive symptoms and episodes are necessarily invasive or lead to chronic ill effects. Indeed, the experience of mild depression can be a passing phenomenon rather than the beginning of a serious condition.

The duration of the feelings of depression is an important factor in the experience of depression. A more prolonged period of depression is associated with greater levels of depression.
Importantly, this is also influenced by the type and number of stressors a person is experiencing. More stressors in a person’s life are likely to be associated with higher levels of depression (Abramson et al., 1978). Indeed, it has been suggested that stress and depression are separate but related concepts and are often co-morbid (Greenberg et al., 1988). Sanderson et al. (1990) suggested that depression was accompanied by anxiety and stress. It has also been suggested that loneliness is linked with depression and is often co-morbid (Freden, 1982). This illustrates that it is not uncommon for the presence of multiple but individual negative components of psychological well-being.

Depressive symptomology varies with the levels of depression. Depression can change the way a person thinks, feels and behaves although within these it can manifest in several ways. Physical manifestations can be associated with sleep disruption and restlessness (Psychology online, 2001). Other manifestations can be negative thoughts, feelings of helplessness and hopelessness, social withdrawal amongst many others. Each of these in turn have implications for socialisation and the other components of psychological well being discussed in this chapter.

Depression has been identified to have a relatively early age of potential onset which makes it very relevant to an adolescent population. It has been suggested that the most common times for the onset of depression in adolescence is between the ages of 15 and 19 (Hammen, 1997). Under the age of 12 it is very uncommon for depression to be experienced but from the teenage years it is much more common. Hammen, (1997) also suggested that depression is more common in women than men and that this trend is even more common in a teenage sample.
There is a strong body of research evidence which suggests that social support can have a positive influence on the levels of depression (e.g. Freden, 1982; Henderson, 1992). The basic premise is that depression and depressive symptoms will be more prevalent in those individuals with low levels of social support (Henderson, 1992). An individual with a large support network will be better able to cope with life stresses and less susceptible to psychological disturbance. The literature into the relationship between depression and social support has generally supported this notion. Indeed, longitudinal research would lend support to the notion that it is social support which influences mood rather than the reverse relationship.

Overall depression, like the other components of psychological well being would appear to be influenced by social support. The research evidence would appear to suggest that higher levels of social support are associated with lower levels of psychological distress. Whilst depression, loneliness, anxiety and stress can be examined independently they would also appear to be similar on many levels. Social support can act as a buffer for stressors and it has also been seen as a main effect. Whilst definitions of social support have varied greatly the general trends in the findings have not. Consistent associations between social support and the various components of psychological well being have been found. This then leads to the question of whether digital communication can contribute to social support and the consequent psychological well-being.

Summary

This chapter has presented and discussed the concept of social support suggesting that it is multi-dimensional and that these
dimensions are not mutually exclusive. This chapter has also illustrated the links between social support and psychological well being. The following chapter presents and discusses the research questions for the current research.
Chapter 5: Research Questions

Overview

This chapter presents the research questions which developed out of the theoretical and social considerations outlined in previous chapters. This chapter also briefly links the research questions to the design of the main questionnaire.

The Research Questions

Based upon the literature discussed in the previous chapters and topics which have not yet been investigated by previous research a series of research questions were formulated. The questionnaire for the current research (See Appendix 2) has been designed to investigate the following series of research questions:

1. What are the trends in the use of the Internet and mobile phones?
2. To what extent is the Internet actually being used for the purposes of interaction rather than, say, gaming or information gathering?
3. How much use is made of digital communication media in terms of time?
4. To what extent does text-based communication act as a substitute to communication either in person or by phone?
5. To what extent do new communication media such as the Internet and SMS act as a substitute for face-to-face communication?
6. Is the Internet is being used to maintain previous relationships or it is being used to form new ones?
7. Do users of digital communications show signs of higher levels of depression, loneliness and anxiety as some researchers have suggested?
8. Does this relate to the amount of time spent engaged with the new digital media?
9. Are there any gender differences in the use of these digital media?

Each of these research questions was incorporated into the design of the questionnaire. It was not feasible to ask questions which relate solely to any of the research questions. Inevitably there was a degree of overlap between the different measures and the related research questions. This has been unavoidable due to the highly related nature of the concepts being investigated.

Research Question 1. What are the trends in the use of the Internet and mobile phones? This is based on a desire to obtain a broad understanding of the importance of and use patterns for the Internet and mobile phones. Consequently, the research question is broad in its scope. The research questionnaire reflects this desire especially in Questions 3 through to 15 and Questions 17 through to 24 (see Appendix 2).

Research Question 2. Is the Internet actually being used for interactional purposes? Question 12 (Please rate how much you use the following resources on the Internet), Question 14 (How long do you use the Internet for each of these reasons?), Question 24 (what do you use text messages for?), Question 25 (How often do you use the following to contact friends?) and Question 27 (How do you establish contact with them when seeking advice?). Each of these seeks to establish the nature of what the Internet and Mobile
phones are being used for. A limited set of listed options to choose from is provided.

Research Question 3. How often are these mediums being used and for how long? Again, Question 12 (Please rate how much you use the following resources on the Internet) and Question 14 (How long do you use the Internet for each of these reasons?) were part of an attempt to investigate these use patterns. In addition, Question 23 (How many text messages do you send per day?) was designed to give an indication of the quantity of daily use for the mobile phone.

The related nature of the research questions being investigated in this research and the measures used should be apparent. Research Questions 2 and 3 are both investigated using some questions investigating the trends of the use of these new digital media as required to answer Research Question 1.

Research Question 4. Does text-based communication act as a substitute to communication either in person or by phone? Question 24 (what do you use text messages for?), Question 25 (How often do you use the following to contact friends?), Question 27 (How do you establish contact with them when seeking advice?) and Question 28 (Are these alternative forms of communication substitutes to face-to-face interaction?) have been specifically designed to investigate the fourth research question but also the fifth research questions below. These research questions are similar in concept although the second of these research questions is more specific in its focus.
Research Question 5. Do new communication mediums such as the Internet and SMS act as a substitute for face-to-face communication? Question 28 directly investigates this by asking for the participants' opinion but the other questions are designed to elicit information on this in relation to actual behaviour patterns. This allows for the comparison of the responses to look for consistency in the responses. This helps minimise the issues of honesty in the responses for this research question. This can be done by comparing the responses on these sections to check for consistency in the responses. It is also possible that a person might not think of these communication methods as substitutes when asked in Question 28 but actually uses them for this purpose. Space was included in this question to allow the participant to comment further on this issue. This allows for the elicitation of information beyond the simple 'yes/no' nature of the question.

These questions attempt to address this by investigating the position and impact that these new digital communication media in comparison to the older, more established means of communication (e.g. the telephone, letter writing etc). Another facet of these questions is that it allows for the comparison of these existing forms of communication with the newer forms in terms of their use and prevalence.

Research Question 6. Is the Internet being used to maintain previous relationships or it is being used to form new ones? This research question has implications of whether the Internet (and less so mobile phones) is being used to maintain previously existing friendships or whether it is being used to create and maintain new ones formed 'online'. Question 15 (for what purpose do you use chatrooms?) incorporates this sort of feature. The distinction between 'online' and 'offline' friends is made here. Where offline
friends are those friends that form part of the face-to-face interactions such as College or work friends. They are not exclusive to being face-to-face contact though because the Internet can be used to maintain the friendship out of College/work hours.

'Online' friends are therefore considered to be those who have been solely met online. Consequently they are not part of the immediate face-to-face communication network. This distinction is important to investigating whether the Internet is purely being used for contacting existing friends or making new ones. This feature was not repeated for mobile phones because they do not suit this kind of friendship formation in general. Mobile phone communications with strangers for whom one does not have a specific number is not a realistic possibility in general. There is anecdotal evidence that accidental wrong numbers have developed into friendships but this is unlikely to be anything other than a rare phenomenon.

**Research Question 7. Do users show signs of higher levels of depression, loneliness and anxiety?** On the basis of previous research (such as Kraut et al., 1998; Weiser, 2001) as a background, parts of the questionnaire were designed to measure aspects of social and psychological well-being. This was to assess whether there was any evidence of negative impacts associated with the consumption of the new digital media. While in this thesis, such claims are regarded with a degree of scepticism, nevertheless evidence concerning the possibility is in short supply.

**Research Question 8. Do the levels of psychological well being vary depending on how much time is spent engaging in the use of these new digital media?** This research question examines potential relationships or potential differences between the amounts of use of these digital media, types of use and the impact on the person...
involved in the use of these. Just to look at the levels of these psychological well being issues in isolation is not sufficient. Therefore, the responses to the three main measures Social support (Question 26), the Depression Anxiety and Stress Scale (DASS21, Questions 35 through 55) and the UCLA Loneliness scale (Questions 55 through 75) need to be examined in relation to factors such as the levels of consumption for these digital media. This was incorporated into the questionnaire by the use of Question 15 (for what purpose do you use chatrooms?), Question 17 (How skilled/knowledgeable do you perceive yourself to be with the Internet?), Question 23 (How many text messages do you send per day?) and Question 24 (what do you use text messages for?). These questions allow for the 'control' of such measures of the amount of consumption or for the differentiation and selection of high and low digital media consumers.

**Research Question 9. Are there any gender differences in the use of these digital media?** The consideration of gender differences in response to new media has been common in the study of other communication innovations. Do males and female differ in the consumption, frequency and type of usage? This is an important issue to investigate since its implications for identifying the most at-risk groups and for specific research on such groups are great.

**Summary**

This chapter has presented the research questions which have formed the basis for the design of the current research. This chapter has also linked the research questions to the design of the questionnaire. A detailed discussion of the design of the questionnaire is presented in Chapter 8. The following chapter presents and discusses the research design and methodology.
Chapter 6: The Research Methodology: Design and Logistic Considerations

Overview

This chapter addresses critical issues underlying the planning of the major survey central to this thesis. The selection and development of the methodology utilised in this research are discussed.

Why Quantitative?

The need for basic systematic information: Throughout the research planning the question of appropriate research methodologies has been at the forefront of the research activity. Overwhelmingly, the data collected has been quantitative in form. This was for a number of reasons. Primary among these has been the general characteristics of this field of research. Digital communications, as a social psychological research topic, has been relatively sparse. The previous research has been very narrow in its scope, mainly focussing on very selective aspects of the Internet and the Internet as a communication tool.

Chapter 3 showed that social psychological research into the new digital communications media (the Internet and mobile communications) has not been extensive. There is a large body of research into the Internet especially but the social psychological features of these media have not been a prime consideration. The very variety of uses of the Internet offers opportunities for researchers from a number of disciplines. So research has been conducted from many research perspectives, many of which lie well beyond the social sciences and social psychology in particular.
Because of the basic orientations of much of this research in economics, business studies, and medical communications, the majority of digital communications research has little to inform a social psychological view of digital communications.

My research interest is in the Internet and other digital communications as part of social networks in general. While there is valuable research into the effectiveness of specific aspects of digital communications such as cues in online relationships (e.g. Whitty & Gavin, 2001), this does not and cannot address questions of digital communications as part of the broad communications and interpersonal network of people. It was an important aspect of planning this thesis to locate digital communications as part of the broader social and communications environment of users. A basic tenet of the research was that research on the social aspects of digital communications is in its infancy. Consequently, the need is for research which takes a wide view of the social aspects of digital communications. It was felt to be an important part of the research strategy to concentrate on more macro topics. From this follows the broad research strategy of larger scale data collection and the consequent need for quantitative data collection and analysis strategies.

In planning the thesis, it became very evident that it was all too easy to make unsubstantiated assumptions about the nature of the use of digital communications. This is not unexpected given the saturation of digital communications through many sectors of society. For this reason, it was important to obtain a broad information base that would then allow more detailed and specific research questions to be answered. Only in this way could the discussion be based firmly in the social reality of digital
communications use. The current research was been designed with this as a core issue.

Given the lack of a detailed research base on digital communications from a social perspective, there would seem to be a premium on survey-style research that could include substantial numbers of research participants. Of course, any research methodology has both advantages and drawbacks. A primary limitation of survey research is that the amount and level of detail to be collected is severely curtailed by the need to develop materials which are conducive to the co-operation of very substantial numbers of participants and the limits to the researcher's resources for the research. At the same time, the question of the representative nature of the sampling can be better addressed when drop-out rates and non co-operation rates are kept to a minimum.

The major disadvantage of survey research for the present purposes is that only limited demands can be placed on the participants in terms of information requested. This limitation is really in terms of both quantity of material and the quality of material in that little or no tailoring can be made of the materials to the precise circumstances of any individuals. Qualitative or semi-structured interviewing would have had much more scope for this 'richness' of data. However, resource constraints mean that much smaller sample sizes would have been used.

Small sample sizes provide considerable difficulties for any quantitative analysis. Substantial sample sizes mean, for example, that confidence intervals will be smaller all other things being equal. Furthermore, many of the more powerful statistical analyses such as factor analysis and multiple regression demand large sample
sizes for their effective use. Naturally, even with large sample sizes, generalisation is best kept to the population on which the research was carried out. The research which forms the basis of this thesis was on a very limited age group – perhaps the one for which digital communications are the most important – but is still limited by this.

Advantages of the self-completion questionnaire: Having decided that a relatively large scale survey would be the optimum data collection strategy to address the research topic within the constraints of resources, certain issues are highlighted for consideration. In particular, the questions of how best to design both the questionnaire and the logistics of collecting the data need to be addressed. The data available to a researcher is the end point of a complex social process, which may fail at a number of steps. For example, the distribution of questionnaires may involve the approval of a gate-keeper in an organisation who may not wish for a poorly designed or a too-intrusive questionnaire to be circulated. Even if the questionnaire reaches the participant, that participant has a choice of what to do – the participant may put it to one side if it is too long but never get around to completing it, or the participant may decide that the questions are not answerable meaningfully and so fail to provide data. Even the return of questionnaires may be dependent on the thoroughness of members of the research chain.

The following are among the main considerations involved in designing the materials for the survey stage:

♦ Completion time and ease of completion: Difficulties in the recruitment of participants might be expected if the questionnaire was too long or over-complicated. The same factors would also encourage incomplete questionnaires and
missing data would be gained if the research failed to comply with these basic requirements. These factors were highlighted as the process of piloting and refining the research was undertaken (Chapter 7).

- **Logistics of distribution:** The self-completion questionnaire is intended to save the time of the researcher by cutting-down on administration time. One potential advantage of self-report measures is that their distribution may be delegated to another person with relatively little training required. This is because instructions to participants, provided they are sufficiently clear and detailed, provide the basic information required by participants in a standard form. Another feature of self-report measures is that they investigate the perceptions of the participants leaving relatively little to the interpretation of the researcher.

- **Recruitment:** The aim of the research was to gain substantial numbers of participants commensurate with obtaining high completion rates. During initial stages of the research and trials of methods, it became apparent that recruitment of participants was likely to be rather more problematic than expected. It was felt that the research topic would be of interest to young people. The original plan was to recruit substantial samples on campus and to confine the study to University students. This had to be revised for a number of reasons. Initially the research was designed to exploit the potential of e-mail as a distribution method. It rapidly proved to be the case that e-mail was not very effective as a means of collecting data from this population. Return rates were low (Chapter 7). Part of the difficulty was that participants did not find it easy to manipulate questionnaires in digital form. This might have been partly of function of the methods available but was obviously decisive in the shift to self-completion questionnaires in hard copy form.
Distribution: The distribution of questionnaires to participants in the research took on a variety of forms. This is because the educational institutions had their own requirements and preferences for data collection. These are essential gate-keepers whose cooperation is vital. Obviously more organisations were approached than finally agreed to take part in the research. Some were happy that the researcher came on campus and met the participants face-to-face. Others were happy to take on the responsibility of distribution and collection of materials and were not keen on the disruption that having the researcher on campus would encourage. Because of this, the questionnaire was designed so that the researcher’s presence was not essential. There are disadvantages to third-party distribution, of course. It is difficult to ensure that the ethical requirements of research are fulfilled. Partly to overcome this, a ‘briefing’ was put at the start of the questionnaire and a ‘debriefing’ at the end (See Appendix 1).

Dealing with Some Limitations of self-completion questionnaires: Questionnaire based research is vulnerable to a number of criticisms. Wherever possible, these were taken into account at appropriate stages of development of the research instruments and methodology. These include:

- There is an issue of honesty. Participants who are not honest in their responses may confound the data in unknown ways. This is regarded as a particular problem for research into ‘sensitive’ topics such as sexual habits, bereavement etcetera. Much of the current does not investigate particularly sensitive topics in general. Nevertheless, the research does contain material measuring personality and emotional characteristics. It does also contain a number of questions which relate to loneliness and
similar social psychological characteristics as well as social support networks. These were presented to participants as being part of the researcher's desire to look at the use patterns and functions of these digital communication media and their relationship with emotional states. The participants were not informed about the exact nature of the DASS21 (Lovibond & Lovibond, 1995) and the revised UCLA Loneliness scale (Russell et al., 1980). These items used to form these scales are clear and transparent in terms of their meaning. It was felt that labelling them as psychological tests or measurements would risk causing participants unnecessary concern that this was research into their psychological stability or some similar concept. Participants were fully debriefed about the research after the completion of the questionnaire.

The questionnaires allowed participants to be anonymous if the participants so wished. As is conventional, participants were informed of their right to withdraw from the research at any time. This was not purely for ethical reasons but to minimise failure to answer honestly. Furthermore, personal details (name etc) were purely optional on the college version of the questionnaire. The provision for anonymity was made in order to help alleviate any potential apprehension and anxiety associated with taking part in psychological research. In conjunction this can help increase the accuracy of the responses. (For the university version of the questionnaire it was not possible to include this level of anonymity because the data needed to be identifiable to the participants by the researcher to allow for collation of different data from different time periods. All participants were informed that any data provided would be solely for the use of this research and any analysis of the data would not identify them as individuals in any way.
Longitudinal Study

The research was originally intended to include a longitudinal component. There was to be a one-year follow up to the initial data collection phase. This would have allowed for more sophisticated statistical analysis because of the time dimension. Unfortunately the university sample was small and logistical considerations made it impossible to carry out a longitudinal study of the college sample because of various constraints. The repeated measure would allow the researcher to study changes the patterns of use and psychological well-being as suggested in previous research (e.g. Kraut et al., 1998). Due to time and financial constraints, it was not possible to make the whole sample a repeated measure. The longitudinal study of phenomena like the Internet and mobile communications is important because it potentially helps clarify trends in the more static single phase methodology.

Ethics

As with all psychological research ethical considerations had to be taken into account. The design of the current research was therefore influenced by these considerations. There are four broad areas in the design of the research shall be addressed individually.

1. The demographic data: As has been discussed previously in this chapter, the first section of the questionnaire collects some simple demographic information such as the gender and age of the participant. The name and e-mail address was also requested but this was purely optional for the participants to fill in. Therefore the participants could be completely anonymous both to the researcher and in
the analysis should they desire. Complete anonymity was assured in any analysis regardless of whether this information was supplied by the participant. The demographic items on the questionnaire were felt to be standard for research of this kind and did not ask for any sensitive information.

2. The usage patterns: The middle section of the questionnaire was comprised of items relating to type and duration of use for various digital communications. Whilst this section of the questionnaire was investigating individual’s usage patterns for the digital media it was felt that the items included in the measures were not of a particularly sensitive nature. Again no individual would be identifiable in the analysis and discussion of the findings.

3. The psychometric tests: The final sections of the questionnaire were designed to investigate a series of variables related to psychological well being. These included measures of depression and loneliness. This part of the questionnaire is one which could potentially be of the most concern ethically. However, the current research was designed to take a ‘snap-shot’ measure of the participant’s psychological well being. No attempt was made to influence or in any way manipulate the levels of psychological well being of the participants. The well being of the participant should remain unaffected by taking part in this research. Once again individual participants and their levels of psychological well being would not be identifiable in any part of the research.

4. General design and procedure: Beyond the consideration for the individual sections of the questionnaire, overall ethical considerations were also taken into account. The questionnaire included a briefing section at the beginning
which outlined the research and the participant’s rights. The ability to withdraw from the research at any time was clearly stated and the researcher’s e-mail address was also provided on the questionnaire. This was to allow the participants the option to contact the researcher with any questions or concerns that they may have about the research. This was to supplement the option to ask the researcher in person when the questionnaires were distributed. Again, anonymity was assured and adhered to at all stages of the research.

Summary

This chapter has presented and discussed the design and procedure employed by the current research. The considerations of both the methodologies employed and ethics have also been discussed. The following chapter will present and discuss the sampling and pilot work.
Chapter 7: Sampling and Pilot Work

Overview

The main focus of this chapter is on describing the methodology and sampling employed in detail. This chapter will also present and discuss the pilot work and its implications for the final research.

General Characteristics of the Participants

The main study reported in this thesis involved an investigation of young people’s use of the internet and mobile telephone technology (n=443). Various colleges in various parts of England participated in the research. This is referred to as the college student sample. There is also a subsidiary study of University students (n = 45). The undergraduate sample consisted of undergraduate students from the Social Sciences Department at Loughborough University. This is referred to as the university sample. In total, 498 participants completed the questionnaire and supplied usable data (see Table 7.1 on the following page for details).

The college student sample consisted of participants from Colleges based in both the East Midlands and South Cumbria/North Lancashire. Two Colleges from each of the areas agreed to participate in the research. Forty two percent of the College student samples were male (n=185) and approximately 58% were female (n=258).

As Table 7.1 illustrates, 53 young people participated at the DeLisle 6th Form College, Leicestershire, 168 completed questionnaires were from Lancaster and Morecambe College (Lancashire) and a further 32 and 190 questionnaires were received from Dallam 6th Form College (Cumbria) and Rawlins Community College (Leicestershire)
respectively. The largest numbers of the College sample were collected at the Rawlins Community College and Lancaster & Morecambe College.

**Table 7.1: The number of participants and the schedule for collection from each of the sources**

<table>
<thead>
<tr>
<th>Month</th>
<th>Place</th>
<th>Participant Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 2002</td>
<td>Loughborough University</td>
<td>45</td>
</tr>
<tr>
<td>May/June 2002</td>
<td>DeLisle College Loughborough</td>
<td>53</td>
</tr>
<tr>
<td>October 2002</td>
<td>Lancaster &amp; Morecambe College Lancashire</td>
<td>168</td>
</tr>
<tr>
<td>November 2002</td>
<td>Dallam 6th Form Cumbria</td>
<td>32</td>
</tr>
<tr>
<td>November 2002</td>
<td>Rawlins Community College Quorn</td>
<td>198</td>
</tr>
</tbody>
</table>

The geographical distribution of the overall sample was split between the Loughborough in the East Midlands, Lancaster in the north of Lancashire and Heversham in south Cumbria. The sample was more-or-less evenly split between North of England and the East Midlands. The colleges in the East Midlands (DeLisle and Rawlins Colleges) accounted for 54.9% of the sample and the colleges in the north west of England (Dallam and Lancaster & Morecambe College) accounted for the remaining 45.1% of the sample.

Dallam 6th Form Centre is a rural 6th form in south Cumbria. The 6th Form Centre is attached to Dallam School which is a secondary education centre. The 6th Form centre is based on a separate site located in a small village. There is also provision of boarding
facilities for both the secondary and tertiary level students. This means that a small number of overseas students come over to study at both the secondary school and the 6th Form Centre. The majority of the students are based locally and come from the surrounding villages. Dallam is a very small 6th Form centre with a total of about 65 students across the two years of study.

DeLisle College is located in the university town of Loughborough but despite this major locational difference it has very similar physical characteristics to Dallam 6th Form. The college is attached to a secondary school and is only caters for a small number of students. The school and college are Roman Catholic and therefore caters for that portion of the local community.

The Rawlins Community College is a large college situated in the village of Quorn in the East Midlands. The college caters for a diverse range of students in the surrounding locality. It offers a wide range of courses and caters for a mixture of age groups. Whilst it is essentially a rural college it has a wide catchment area spreading into the nearby town of Loughborough.

Lancaster and Morecambe College is a large college situated in Morecambe in Lancashire. It has many similar characteristics to the Rawlins Community college despite being an urban institution rather than based in a rural village. It offers a very wide range of courses and caters for a diverse range of age groups. As a consequence of this it attracts students from across north Lancashire and South Cumbria although it mainly caters for the residents of the Morecambe town and the nearby city of Lancaster.
The gender distribution of the overall sample favours females (Table 7.2). Although the male participants are substantial in number (n=185), they account for only 41.8% of the total sample. The female participants (n=258) account for the remaining 58.2% of the sample. It is difficult to fully account for the disparity. One of the reasons for this might be the locations of the research. It might be noted in passing that this is a sample which has stayed in the educational environment past the minimum school leaving age. Females are recognised as being generally higher achievers academically which might be the reason the present sample favours them. Nevertheless, overall there is a reasonable balance of numbers between the two genders for the purposes of this research. Potential gender differences, as a consequence, may be explored given this.

At first sight, the age range of the participants is surprisingly large (Table 7.3). The minimum was 14 years and the maximum was 40 years. Both Lancaster and Morecambe College and Rawlins Community College specialise is adult education along side the conventional college student age group.

Typically participants were 17 years of age (the mean age was 17.47 years and both the median and mode were 17). The standard deviation of age was 2.48 years and the corresponding standard error of the mean of .12. Since the vast majority (96.6%) of the sample were between 16 and 23 years of age, all but 3.4% of the sample were within 2.5 standard deviations of the mean. (There are

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### Table 7.2: The gender Characteristics of the Sample

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>185</td>
<td>41.8</td>
</tr>
<tr>
<td>Female</td>
<td>258</td>
<td>58.2</td>
</tr>
<tr>
<td>Total</td>
<td>443</td>
<td>100</td>
</tr>
</tbody>
</table>

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33 missing cases in the data for age. This accounts for 7.4% of the complete sample. In every case, this was simply due to the failure of participants to include their age on the questionnaire. Because of the inclusion of an upper older tail in the age distribution, the data was repeatedly examined for possible outliers wherever appropriate.

Table 7.3: A Summary table for the Age of the Sample

<table>
<thead>
<tr>
<th>Number of cases</th>
<th>410</th>
</tr>
</thead>
<tbody>
<tr>
<td>used</td>
<td></td>
</tr>
<tr>
<td>Missing cases</td>
<td>33</td>
</tr>
<tr>
<td>Mean</td>
<td>17.47</td>
</tr>
<tr>
<td>median</td>
<td>17</td>
</tr>
<tr>
<td>Mode</td>
<td>17</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>2.48</td>
</tr>
<tr>
<td>Minimum Age</td>
<td>14</td>
</tr>
<tr>
<td>Maximum Age</td>
<td>40</td>
</tr>
<tr>
<td>Age Range</td>
<td>26 years</td>
</tr>
</tbody>
</table>

For the undergraduate sample, the sample consists of 45 undergraduates with an age range of 18 to 42. The sample was taken from the first year Practical Social Psychology course and the introduction to Social Policy tutorial course. The response rate for the Social Policy group was extremely low and out of approximate 60 questionnaires that were distributed, only 4 were returned. The inclusion of this University sample is largely for purposes of completeness though it supplies some comparative information. The original plan of the thesis was to concentrate on University students but attempts to recruit a substantial university sample were less than successful. Given the time and resource constraints of a doctoral programme, it was decided to seek an alternative sample
of a similar age group. The problems of sampling university students are returned to later.

Completion/return rates for University students need to be assessed on the basis of the potential involvement of students and the number of questionnaires issued to them. This is complicated by the fact that some student groups were relatively easy to obtain completed questionnaires from whereas others could not be re-contacted if they failed to return their questionnaires. Most of the returns were from Social Psychology first year students. For this group the return rate is satisfactory at 75% of those contacted. For other students contacted through tutorials, the figure can be estimated at 7%, a wholly unsatisfactory figure.

The poor return rates from University students can be explained on the basis of factors such as:

♦ The need for the participants to complete their questionnaires in their own time.
♦ The absence of a follow-up procedure for contacting non-participants
♦ The over-researching of student samples for many pedagogic purposes
♦ The influence of holiday and exam periods.

**Questionnaire Piloting Dec-Feb 2001/2**

During the period between December 2001 and February 2002 the questionnaire was designed, tested and developed for the main study. The initial questionnaire was piloted on undergraduate students at the university and was generally satisfactory as a research instrument. Changes were minor. The participants were
encouraged to make comments about the questionnaire to help with its development of. This piloting highlighted that participants were misunderstanding Question 11 and often no answer was given. See previous chapter for a full and detailed description of the questionnaire. The question was re-phrased from “How do you rate friendships made online compared to offline?” to “Irrespective of whether you use chatrooms, how do you rate friendships made online compared to offline?” This addressed the problem that the participants who didn’t use chatrooms, were ignoring the question because they didn’t think it applied to them. The rephrasing brought the question more in line with the researcher’s intention of collecting relevant information from all participants. A copy of the final undergraduate questionnaire can be found in Appendix 1.

Most change was made to the pilot questionnaire when it was adapted to the college student sample (see Appendix 2 for the complete revised college version of the questionnaire). The first sections relating to the participants’ Internet usage prior to coming to university were removed as they were not appropriate to the college sample in that form. They were replaced with a similar questions but which related to current use of the Internet by the college sample. Two extra questions were added to the section regarding mobile phone text usage (questions 20, 21, App 2). In question 24 (college version) the third statement: ‘Partner/spouse’ was changed to ‘boyfriend/girlfriend’ for the college version of the questionnaire. This was because it was decided that this would be more relevant to the age group. The rest of the pilot questionnaire was retained in the same form for the college sample.
Early Fieldwork Difficulties

Satisfactory completion of the fieldwork phase of this research proved to be more difficult than anticipated. Considerable difficulty was experienced, despite a lot of effort, to obtain returns of completed questionnaires from substantial proportions of university students. As a consequence, changes were made to the sampling methods and population used. The original plan for was to circulate the questionnaire for the undergraduate students through an internet ‘mail’ survey. The survey was to be e-mailed to all the first year students at the university with the questionnaire attached. Early piloting of this method showed it to be inadequate. The return rates were extremely poor. This method was not productive despite efforts to keep the materials relatively quick to complete. Among the difficulties were:

- The questionnaire takes approximately 5-10 minutes to complete by hand but the ‘online’ version took about 30-40 minutes. This is due to the fact that the participant had to edit the questionnaire in Microsoft® Word to complete it. This seemed to have a critical effect on the number of participants who completed the questionnaire.
- The questionnaire is a large file to attach to an e-mail and the students have a limited amount of file space available to them.
- This method of data collection relies on the knowledge and competence of the participant with the Internet and personal computers. With the sample being a first year sample, many had little or no experience with e-mail attachments and how to correctly access and re-attach the files. Many of the responses that were received came as blank e-mails without the file attached and e-mails had to be returned with instructions of how to attach the file.
One of the responses arrived with a 'virus' inside. This meant that the file could not be opened without the virus infecting the computer.

All of these problems meant that the data collection method was changed to a 'pen and paper' method. In many ways this was disappointing in the light of the fact that some researchers are now recommending the use of the Internet as a tool for collecting data (e.g. Jones, 1999)

In the early stages of the research, some focus groups online were run. This was based on a desire to ensure that the research was not simply about modern communications technology but also utilised it as part of the research method. Specifically, the focus groups attempted to elicit views and opinions from those people that are using chatrooms. It became very clear that this technique was not effective as far as my procedures were concerned. After several separate attempts, no one entered into the chat. On several occasions a chatroom was set up on the Microsoft Network (MSN) but for every attempt resulted in the researcher being in attendance on the chat room for two hours completely alone and with no response at all. One can only surmise that this might be due to:

- The inexperience of the researcher with participating in and running chatrooms. This does not seem to be a strong possibility given the relatively simple and straightforward skills involved in running a chatroom.
- Issues about the context of the discussion or its topic that stopped people entering into the chatroom. Potential participants may have been deterred from participating because the chatroom was clearly identified as a research enterprise. Ethical
considerations would make it difficult to contemplate any other contextualisation.

- It is conceivable that the researcher's experience simply reflects a low level of internet traffic for most Chatrooms. This is difficult to evaluate without data for other Chatrooms.

Sample

As a result of difficulties experienced in recruiting sufficient undergraduate, the research was extended to include younger participants. The analysis requires a degree of separation of the Undergraduate and a College student samples. The College student sample in considerably larger than the undergraduate sample and will be the main focus of the analysis. As already detailed, difficulties were experienced in getting access to and responses from the student sample. As was discussed in Chapter 6, the student sample was initially to be a repeated measure but a lack of participation for the repeated measure meant that this element had to be dropped from this thesis.

Measures

The present research uses several scales; both ones which have been validated and refined previously by researchers and some specifically generated for this research. Given that the research is on populations somewhat different from the original standardisation samples, it is considered important that the psychometric properties of all of the scales included in the research are analysed irrespective of their origins. Due to the differences in the two target populations two versions of the questionnaire were created. Detailed description and discussion of the questionnaire can be found in Chapter 8.
Summary

This chapter has presented and discussed data collection and pilot work involved in the current research. The composition of the sample and difficulties experienced have also been discussed. The following chapter presents and discusses the design and structure of the questionnaire.
Chapter 8: Questionnaire Design

Overview

This chapter gives a detailed account of the design of the questionnaire. Discussion of the individual items and measures included on the questionnaire is presented. In particular, this chapter examines empirically some of the main measures used in the research, in particular the psychological scales such as the DASS21 (Lovibond & Lovibond, 1995) and UCLA Loneliness Scale (Russell et al., 1980).

Design of the Questionnaire

The questionnaire consisted of 10 pages of items (although when printed this was reduced to 5 pages through double-page printing). At the beginning of the questionnaire there was a short briefing paragraph for the participants to read (See Appendix 2). This paragraph introduced the research and gave instructions about completing the questionnaire. The design of the questionnaire incorporated 5 broad sections which addressed separate interests of the current research. These 5 sections were:

1. Demographic Information
2. Internet Questions
3. Mobile Phone Questions
4. Social Support
5. Psychometric Measures

All scales use a four or five-point Likert-type scale or a simple dichotomous answer (e.g. yes/no) as their response format. These sections will now be discussed individually.
Demographic Questions: The first items on each version of the questionnaire were designed to investigate broad demographic trends such as age and gender. These asked for simple information such as the participant's age, gender, e-mail address (optional). These items were selected to enable comparison between groups (e.g. gender) and for investigating any other trends in the data. A measure of social class was not included in the current research. This is because parental social class can difficult to assess via third party information and the participants' might not be aware of certain demographic variables associated with social class. Examples of this would be parental income, house value. Indeed, it is difficult to work out a model of the role of social class when all participants were undergoing prolonged education and effectively are not working class by that definition.

Internet Questions: The second section on the questionnaire was designed to investigate various activities and functions of the Internet. This section begins from item 3 on the questionnaire (see Appendix 2) and concludes at item 17. The opening items in this section investigate a series of broad demographic details about the participants' access and use of the Internet. These details include whether the participant has access to the Internet at College and at home. Other items included the duration of previous Internet use and the frequency of Internet use for different aspects e.g. Shopping and E-mail.

A good example of this would be item 12 (Please rate how much you used the following resources on the Internet) which examines the frequency that different Internet resources are used. These resources were:
These were measured on a 4-point Likert-type scale. The descriptors used were: never, rarely, sometimes and frequently. Another example would be item 14 (How long do you use the Internet for each of these reasons?) on the College version of the questionnaire (CQ) and item 9 (same) on the Undergraduate questionnaire (UQ). This was designed to investigate the duration of use of the Internet for the same series of resources stated for the prior item. The responses were measured on a 5-point Likert-type scale. The descriptors used were: never, 0-1 hours a week, 1-3 hours, 3-5 hours and over 5 hours.

Another example from this section of the questionnaire would be Item 13 (Where do you use the Internet?). Item 13 investigates the frequency with which the participants access the Internet from a series of locations. These locations were:

1. College
2. Home
3. Library
4. Internet Café
5. Mobile Phone

The response format employed the same 4-point Likert scale as item 12. This had responses ranging from never through to
frequently. Other items investigated in this section of the questionnaire included items regarding the use of chatrooms (Item 15) and perceived skill with the Internet (Item 17). All of these were included in the research to enable a clearer view of what the Internet is being used for, where from, for how long and how often.

**Mobile Phone Questions:** The next section of the questionnaire consisted of a similar series of questions but regarding mobile phone usage. Again this section began with some demographic use variables. Items 18 through to 21 (CQ Appendix 2) investigated topics such as whether the participant owned a mobile phone and whether they paid the bills for the phone. Other items included whether the mobile was left on all the time. The response format for all of these items was a dichotomous yes/no structure. Item 22 (CQ) investigated how SMS text messages were sent by the participant. This included the options of via a mobile phone and via the Internet. Item 23 (How many text-messages do you send a day?) on the college questionnaire examined the number of SMS messages sent per day. A five-point response scale was employed where the increments with the following descriptors: 0 texts per day; 1-5 texts per day; 6-10 texts per day; 11-20 texts per day and Over 20 texts per day.

The final mobile phone question investigated what SMS text messages were being used for by the participants. Item 24 (CQ) gave the participants a list of possible functions for SMS text messages and asked them to rate the frequency with which they used each function. These functions were:

1. Conversation
2. Prior to another form of communication
3. Substitute for another form of communication
4. Seeking advice/information (friends)
5. Just to make contact
6. Pass on joke messages
7. Receiving information (formal)
8. Making social arrangements

These were measured on a 4-point Likert-type scale. The descriptors used were: never, rarely, sometimes and frequently. This list of possible functions was formulated as a means of investigating what SMS text messages are being used for. It is important to know what these messages are being used for not just how many they are sending. The different functions may have different influences or connotations for psychological well being so it is important to be able to examine these.

**Social Support:** The measures of social support were designed to investigate the nature of social support broadly in the target samples. The other psychological measures such as depression and loneliness were designed to investigate the association with the components of social support. Much of the research into the effective measuring of social support has been conducted to investigate the phenomenon either before life changes, after or independently of these events that precipitate the need for social support (Thoits, 1982). A great number of studies have sought to investigate social support in relation to the current problems and life changes that are being experienced (Albrecht & Adelman, 1987).

Many scales have been developed to investigate social support issues (e.g. House & Kahn, 1985; Sarason et al., 1983). A high proportion of these measures have been self-report. The basic
premise upon which these scales are based is that the important aspects of support are those behaviours, which the individual perceives as being supportive (Albrecht & Adelman, 1987). The argument for using the self-report measures is that the participant is the most reliable means of deciding what is supportive, helpful behaviour. Issues such as bias and judgement on the part of the researcher are therefore minimised in this type of measure. It is not inconceivable that a researcher could interpret a behaviour as being supportive when the participant does not.

Item 25 (How often do you use the following to contact friends?) lists a series of means of communication to enable some evaluation about how much they use each medium for communication with friends. The list of communication mediums was:

1. Telephone Calls
2. Letter Writing
3. SMS Text Messages
4. E-mail
5. Speaking in Person
6. Chatrooms

A 4-point scale was employed as the response measure. The scale responses ranged from never, rarely, sometimes and frequently. This item was included because it is important to know how the participants make contact with their friends. This has implications for the availability and means of seeking support.

Rather than designing a specific measure to investigate social support as a discreet topic, the research has been designed to investigate the broader social support network. This investigates
whom the person turns to for support during different types of emotional and practical problems. Questions 26 (who do you turn to for help when you have a problem?) has been specifically designed to investigate this. This question allows for the participant to indicate who they turn to and the relative frequency of this. Question 27 (How do you establish contact with them when seeking advice?) has been designed to investigate the means with which they seek this support. In terms of communications this is an important factor to investigate. The question raised in this thesis is just what the role of social support plays in the new digital communication media and conversely what part the digital media play in facilitating this support.

The social support measures used here do not directly measure the strengths of the ties or the satisfaction with these supporters. Nevertheless, it must be noted that social support and social networks are generally considered to be discreet. They are conceptually different phenomena (Laireiter & Baumann, 1990). Social support networks are the framework within which social support can be given. The current research is conceived from a perspective which incorporates social support as a key concept, but largely the evidence collected refers more directly to support networks.

The research literature has generally identified a series of supportive individuals and groups. The present research uses questions based on these supportive roles. Eggert (1987) outlines the role of the family in the support network and the support processes of individuals. In terms of the current research, the family has been separated into 2 main groupings. Question 26 (who do you turn to for help when you have a problem?) has been
designed to identify the supportive contexts and frequency of the support provided. Within this question parents, siblings and partners are listed separately. The same list of potential sources of support is provided in the context of emotional, relational, financial and work-related problems (See Appendix 2). This is to investigate whether different roles within the family are differentially related to the types of social support that is provided.

In relation to the measures of social well-being, research literature has provided evidence that family support can be very positive in reducing stress and depression or avoiding them completely (e.g. Lin et al., 1986; Pearlin, 1984). Indeed there has been a great deal of research showing a strong correlation between social support and the reduction of these indicators of psychological distress (Eggert, 1987).

The next item in Question 26 relates to the support offered by romantic partners. There has been much research that has demonstrated links between the support offered by partners and spouses (e.g. Barbee, 1990; Cramer, 1998; Fincham & Bradbury, 1990). This research again has suggested that there is a strong link between support and positive outcomes for physical and psychological well-being.

The succeeding items included in Question 26 concern the support offered by certain professionals such as teachers, counsellors and the clergy. They were included in the research because they represent a specific kind of support that is more 'formal' in its nature. Whilst much of the research literature concentrates on the supportive roles and network functions of the family, friends and
partners, it is important not to overlook the potential impact that 'professional' people can bring.

The final items in Question 26 were designed to investigate the supportive function and prevalence of friends in the social network. Research (e.g. Argyle, 1992; Barbee, 1990; Leatham & Duck, 1990) has identified the supportive nature of friendships. Again, this has been linked to the avoidance and minimisation of negative psychological states such as stress, loneliness, anxiety and depression. The current research has been designed to conceptually differentiate between those friends that are 'offline' or regular face-to-face contacts and those who are purely 'online' and as a consequence, the individual does not have regular face-to-face contact with.

This is an important distinction. It has been asserted that due to the lack of cues and narrowness of scope presented by the digital communication media, support behaviours provided via these are likely to be minimised (e.g. Daft & Lengel, 1984). The current research has sought to investigate what supportive roles exist and if there is any similarity between these two friendship dimensions.

**Social Support Networks Scale:** All versions of the questionnaire included four major psychological measures. The first psychological measure (Item 26 of the CQ & Item 20 of the UQ) investigates social support networks. This section of the questionnaire consisted of 4 subscales with 8 items. The 4 subscales enquire to whom the participants turned to for social support when they had emotional problems, relationship problems, University/College work problems and financial problems. Each of these four subscales consisted of the same set of 8 different groups of people. The 8 items consisted
of: parents, siblings, boyfriend/girlfriend, teachers, clergy, counsellors, offline friends and online friends. These items were chosen because it was decided that they best represented the categories of support that were available to the participants. The descriptors for these items were never, rarely, sometimes and frequently.

The alpha reliability of the social support scale was calculated using the data for the College student sample. The Cronbach’s alpha for this scale was .85 indicating that the scale has satisfactory internal consistency (Howitt & Cramer, 2002). Not surprisingly, this was supported further when Guttman’s split-half reliability was calculated since alpha is simply the average of all possible split-half calculations. This indicated that the first half of the scale had a reliability of .73 and the second half had a reliability of .72. Overall reliability was calculated as .86. Thus supporting the findings for the Cronbach’s alpha. This suggests that the scale can be considered reliable.

Table 8.1: The rotated factor loadings for emotional support on the social support network scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
<th>Component 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>.00</td>
<td>.45</td>
<td>.14</td>
<td>.00</td>
</tr>
<tr>
<td>Siblings</td>
<td>.00</td>
<td>.82</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Boyfriend/girlfriend</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.88</td>
</tr>
<tr>
<td>Teachers</td>
<td>.30</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Clergy</td>
<td>.62</td>
<td>.00</td>
<td>.00</td>
<td>.11</td>
</tr>
<tr>
<td>Counsellors</td>
<td>.56</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Offline friends</td>
<td>.00</td>
<td>.18</td>
<td>.80</td>
<td>.00</td>
</tr>
<tr>
<td>Online friends</td>
<td>.36</td>
<td>-.16</td>
<td>.45</td>
<td>.00</td>
</tr>
</tbody>
</table>
Further analysis was conducted to test the adequacy of the scale. A principal axes factor analysis with orthogonal rotation was conducted using all the items for this scale. This yielded 8 factors with eigenvalues over 1. The first factor accounted for 20% of the variance in the data, the second factor accounts for a further 13% of the variance. The third factor accounted for 10% of the variance and the fourth factor accounted for 8% of the variance. The final two factors accounted for 7% & 6% of the variance respectively. Consequently, these four factors were subjected to an orthogonal rotation. The rotated factor loadings for the emotional support section of the scale are to be found in Table 8.1 (previous page). Figure 8.1 which is the Scree plot for the complete 32 item social support networks scale can be found below.

Figure 8.1: Scree Plot for the Social Support Networks Scale

Due to the number of items on the scale, Table 8.1 has been reduced to show just the emotional problems section of the rotated principal axes factor analysis. The trends displayed by the factor loadings are repeated for the other four subscales. The tables for these subscales can be found in Appendix 3. As Table 8.1 suggests, the items seem to fall into four factors:
• The first factor appears to be professionals.
• The second factor appears to be immediate family.
• The third factor appears to be friends.
• The fourth factor appears to be partners.

Interestingly, teachers do not load to the required level on any of the factors. Therefore they could only be dealt with as a separate group or could be removed from the further analysis.

**Social Support Scale:** The second of the psychological measures is a 6-item scale designed to broadly investigate perceived social support. The relevant items are Items 29-34 (College Questionnaire) and Items 23-28 (University Questionnaire). The first three items are positively worded and the final three items are negatively worded. This was done as an attempt to counteract any order-effects that might occur (e.g. Schuman *et al.*, 1981; Shaughnessy & Zechmeister, 1994). The descriptors for this measure were strongly agree, agree, disagree and strongly disagree.

Reliability analysis was conducted on this scale also. The scale had an alpha coefficient of .62, which is not considered sufficiently reliable (Howitt & Cramer, 2002). The alpha reliability suggested that if the final item on the scale was removed ("I always ‘surf’ alone.") the overall alpha coefficient for the scale would rise to .69. This approximates the minimum alpha coefficient of .7 which is generally accepted as a minimum indication of acceptable reliability. Consequently, it was decided to include the scale minus the final item in the analysis although it is clear that any inferences made from the data on this scale should be regarded with a greater general of caution than would otherwise apply.
Further justification for this decision emerges when a reliability analysis was carried out on the scale using Guttman’s split-half method. The first half of the scale had a reliability of .65 but the second half of the scale only had an alpha of .36. This suggested strongly that the sixth or final item was undermining the scale properties of the measure. The overall Guttman’s alpha coefficient for the scale was .54, which fails to attain the level that could be considered reliable.

A principal axes factor analysis with orthogonal rotation was performed on the scale to investigate its properties. Two factors with eigenvalues greater than 1.0 were initially extracted. The first factor accounted for 38% of the variance and the second factor accounted for 17% of the variance. The second factor was a very weak factor and it only had an eigenvalues of 1.013, which is very low. An eigenvalue of 1.00 is the minimal criterion of statistical significance. A better indication comes from the Scree plot in Figure 8.2 and the factor loadings are examined.

Figure 8.2: Scree Plot for Social Support

Scale Factor Analysis
As illustrated, there is only really one distinct factor on the scale. The second factor is not distinct from the later and definitely non-significant factors. Factor 2 is at the start of the slow slope which indicates the region in which the variation explained is statistical error. Consequently it must be disregarded. As Table 8.2 illustrates, the first factor appears to be social support, as the scale was designed to measure. The final item on the scale (I always 'surf' alone) does not load on either factor. This item has already been shown to have a confounding effect on the reliability of the scale. This would suggest that this item has little in common with the rest of the scale. None of the items load heavily on the second factor. In other words, if the second factor is excluded or included makes little difference to the interpretation of this part of the questionnaire.

**Table 8.2: The Factor Loadings for the Social Support Measure**

<table>
<thead>
<tr>
<th></th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have many friends at home</td>
<td>.63</td>
<td>-.24</td>
</tr>
<tr>
<td>I have many friends at college</td>
<td>.52</td>
<td>-.35</td>
</tr>
<tr>
<td>I see my friends regularly</td>
<td>.68</td>
<td>.00</td>
</tr>
<tr>
<td>I prefer being on the Internet rather than being out with my friends</td>
<td>.45</td>
<td>.28</td>
</tr>
<tr>
<td>My friends are there if I need them</td>
<td>.64</td>
<td>.10</td>
</tr>
<tr>
<td>I always 'surf' alone</td>
<td>.00</td>
<td>.00</td>
</tr>
</tbody>
</table>

**Psychometric Tests**

Two separate, well-established tests were included in the questionnaire. The first is a depression, stress and anxiety scale and the other is a loneliness scale. Although their psychometric properties were re-assessed as part of the present research, it is
worthwhile describing the measures in broad outline here. Furthermore, a sequence of items measuring self support was also included as this was a key variable.

**Depression, Anxiety and Stress:** The literature into social and psychological well-being (outlined in Chapters 3 and 4) was examined for appropriate measures of these three psychological and physiological states. It is known from research that these are functional aspects of personality and correlate with social support and well-being (Cohen & Wills, 1985). The literature suggests fairly consistently that people who are deficient in their social support networks (e.g. Henderson, 1990) experience higher levels of psychological distress in the form of Depression, anxiety, stress and loneliness. Hence, if the Internet and other forms of digital communications detract from other forms of social support then their use might be expected to correlate with measures of psychological well-being.

The DASS21 (Lovibond & Lovibond, 1995) was selected as the measure of depression, anxiety and stress for a number of reasons. It is a relatively short, self-report scale hence it fitted the design for the rest of the questionnaire very well. The size of the scale was a key feature because as has been outlined earlier in this chapter, the length of the questionnaire was a critical issue for getting good return rates as well as potentially more honest and accurate information from the participants.

The DASS21 was developed using primarily non-clinical samples, which makes it especially suited to this research. Many of the other highly regarded scales such as the Beck Depression Inventory 'BDI'

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(Beck, 1967) have been developed on clinical samples. Whilst they are still applicable to non-clinical samples, they can be rather too sensitive to clinical requirements rather than the characteristics of the more general population. However, the DASS21 has been shown to correlate highly with these existing clinical measures (Lovibond & Lovibond, 1997). All of these considerations encouraged its use in the present research.

The DASS21 measures three functional components, which relate to psychological well-being and the outcomes of social support. The depression component of the scale has been designed to characterise low positive affect, loss of self-esteem and incentive and the sense of hopelessness. The scale measures these using a series of statements to which the participant has to circle the response, out of a choice of four that applies to them the most. The responses ranged from 'did not apply to me at all' to 'applied to me very much, or most of the time'.

The DASS21 comprises of Questions 35 to 55 inclusive on the questionnaire (see appendix 1). The order of the items is mixed and there is no indication which aspects of the scale the questions measure. Hence order-effects are minimised:

- The depression component of the scales are items numbered 37 (I couldn't seem to experience any positive feeling at all), 39 (I found it difficult to work up the initiative to do things), 44 (I felt that I had nothing to look forward to), 47 (I felt down-hearted and blue), 50 (I was unable to become enthusiastic about anything), 51 (I felt that I wasn't worth much as a person) and 55 (I felt that life was meaningless). These statements were
devised based on the literature on depression and depressive symptomology (Lovibond & Lovibond, 1997):

- The anxiety section of the DASS21 is characterised by feelings of autonomic arousal and fearfulness. Items 36 (I was aware of dryness of mouth), 38 (I experienced breathing difficulty), 41 (I experienced trembling), 43 (I was worried about situations in which I might panic and make a fool of myself), 49 (I felt I was close to panic), 53 (I was aware of the action of my heart in the absence of physical exertion), and 54 (I felt scared without good reason) on the questionnaire related to anxiety. Despite these component of the scale being physiological rather than social psychological in its focus, it remains suited to the current research.

- Stress: This is characterised by persistent tension, irritability and a low threshold of becoming upset/frustrated. Items 35 (I found it hard to wind down), 40 (I tended to over-react to situations), 42 (I felt that I was using a lot of nervous energy), 45 (I found myself getting agitated), 46 (I found it difficult to relax), 48 (I was intolerant of anything that kept me from getting on with what I was doing) and 52 (I felt that I was rather touchy) comprised the stress measure. This measure was devised from the literature on the characteristics and symptomology of stress (e.g. Cutrona, 1990).

**Depression, Anxiety and Stress Scale (DASS21):** The third of the psychological measures was the shortened Depression Anxiety and Stress Scale (Dass21) (Lovibond & Lovibond, 1995). This scale was selected because it is a pre-validated measure and has displayed excellent reliability and validity in the research literature. The Dass has been shown to correlate highly with the Beck Depression Inventory (BDI) (Beck & Steer, 1987) and with the Beck Anxiety Inventory (BAI) (Beck & Steer, 1990). The correlation
between the Dass and the BAI was very high \((r=0.81)\) and the correlation between the Dass and the BDI was less strong but still significant \((r=0.74)\) (Lovibond & Lovibond, 1995). This suggests that there is a strong relationship between the Dass and two existing measures of Depression and anxiety. In other words, the concurrent validity of the scale is high in that it relates closely to other measures of the same psychological states.

A reliability analysis was also conducted on the DASS21 scale (Lovibond & Lovibond, 1995). A very good alpha reliability of .94 was obtained. This suggests that there is a very strong internal consistency within the scale. No items needed removing from the scale. This is supported by previous research in which the alpha was .96 (Brown et al., 1997) and .91 (Lovibond & Lovibond, 1995). For comparison purposes, Guttman's Split-half reliability was also calculated. The first half of the scale had an alpha of .88 and the second half had an alpha of .89. Overall the alpha for the scale was .91, which again matches the findings of the original research.

In Lovibond and Lovibond's (1995) original research, the intention was to measure three aspects of personality - anxiety, stress and depression. In a principal components factor analysis with oblique rotation it was shown that 3 factors were extracted. These three factors cumulatively accounted for 41% of the variance. It was shown that most of the items had a moderate to high loading on their own specific factor and they had low loadings on the other factors.

For the current research, a principal axes factor analysis with orthogonal rotation of the scale identified that there was only one main factor in this scale for this sample and the possibility of two further but essential weak factors which explained little more
variance than the minimal criterion of an eigenvalue of greater than 1.0. The main factor accounted for 45% of the variance in the data. The other two factors accounted for 6% and 5% respectively. However, the pattern of the Scree plot for this factor analysis (figure 8.3) suggests that the second and third factors are only explaining error variance since they are the start of the slow declining scale characteristic of insignificant factors.

This contradicts the findings of Lovibond and Lovibond (1995). They found that a factor analysis identified three main factors, which supported the design of the scale. These factors were identified as being Depression, anxiety and stress. The findings of the current research suggest that for the current sample, the scale cannot distinguish between these three factors.

Figure 8.3: Scree Plot for the DASS21

Factor Analysis

The original study used 717 University students, which is somewhat larger than the current sample. Possibly of more significance is the fact that the two samples were of different age groups. It is possible that this has a bearing on the factor structure. The mean scores for
Depression (M = 7.19), Anxiety (M = 5.25) and Stress (M = 10.54) for the original DASS measure are lower than the means found for the current sample. In the current research the mean depression (M = 11.26) is notably higher than the authors found. The means for anxiety (M = 10.03) and stress (M = 12.43) also reflect this trend. This is interesting because it suggests that all three of these traits are more prevalent in the current sample.

However, this may be due to differences in the way in which the scale was scored in the current research. The scale was scored from 1 to 4 in the current research where 1 represented the lowest score on an item and 4 represented the highest value. A high value was associated with a greater incidence of that measure (e.g. depression). In the original research the scale was scored from 0 to 3. This was changed in the current research because it was felt that the range of 1 to 4 aided the analysis rather than having values of zero. However, when the coding is adjusted to be the same, the mean depression (M = 4.32), anxiety (M = 3.08) and stress (M = 5.50) indicate that the mean responses are much lower than the original study. This would suggest that it is possible that depression, stress and anxiety are less common in the current sample anyway. That is, these concepts have less influence for the age group included in the current research.

Table 8.3 (over page) illustrates the factor loadings for the Dass21 scale. The table shows the factor loadings for all the items on the scale without them being separated into their individual components (depression etc). It clearly shows that all the items loaded on the first factor. All of the factor loadings were above .5 and this suggests that this scale is only sensitive to one broad factor for the current research. Indeed, all of the factor loadings indicated in
Table 8.3 are relatively high which does not support a three factor structure for the scale in this research.

Table 8.3: The factor loadings for the DASS21 items

<table>
<thead>
<tr>
<th>Component 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>I found it hard to wind down</td>
</tr>
<tr>
<td>I was aware of dryness in my mouth</td>
</tr>
<tr>
<td>I couldn't seem to experience any positive feelings at all</td>
</tr>
<tr>
<td>I experienced breathing difficulty</td>
</tr>
<tr>
<td>I found it difficult to work up the initiative to do things</td>
</tr>
<tr>
<td>I tended to over-react to situations</td>
</tr>
<tr>
<td>I experienced trembling</td>
</tr>
<tr>
<td>I felt that I was using a lot of nervous energy</td>
</tr>
<tr>
<td>I was worried about situations in which I might panic and make a fool of myself</td>
</tr>
<tr>
<td>I felt that I nothing to look forward to</td>
</tr>
<tr>
<td>I found myself getting agitated</td>
</tr>
<tr>
<td>I found it difficult to relax</td>
</tr>
<tr>
<td>I felt down-hearted and blue</td>
</tr>
<tr>
<td>I was intolerant of anything that kept me from getting on with what I was doing</td>
</tr>
<tr>
<td>I felt close to panic</td>
</tr>
<tr>
<td>I was unable to become enthusiastic about anything</td>
</tr>
<tr>
<td>I felt I wasn't worth much as a person</td>
</tr>
<tr>
<td>I felt that I was rather touchy</td>
</tr>
<tr>
<td>I was aware of the action of my heart in the absence of physical exertion</td>
</tr>
<tr>
<td>I felt scared without any good reason</td>
</tr>
<tr>
<td>I felt that life was meaningless</td>
</tr>
</tbody>
</table>
Loneliness: Again, drawing from the literature and previous Internet research (e.g. Kraut et al., 1998), the research incorporated a measure of loneliness. The revised UCLA Loneliness Scale (Russell et al., 1980) was chosen because it is a highly regarded measure and it suits the design of the current research well. It is a 20-item, self-report measure in which the participants have to choose the most applicable response from a four-point Likert type scale ranging from ‘did not apply to me at all’ to ‘applied to me very much, or most of the time’.

In common with the DASS21 scale (Lovibond & Lovibond 1995), the UCLA Loneliness scale (Russell et al., 1980) is a relatively short measure, which is beneficial to the overall length of the questionnaire. It is also easy to complete and to understand which decreases the likelihood for errors, which would confound the research. The UCLA Loneliness Scale (Russell et al., 1980) comprises of Items 56 to 75 on the questionnaire (see appendix 2). The scale includes items such as ‘I lack companionship’ and ‘I am an outgoing person’. The scale utilizes both positively and negatively worded statements. These statements have been mixed in the scale to minimise the risk that any order effects can occur. The scale has been developed and revised using the large body of research into the components and characteristics of loneliness (Peplau, 1985).

The literature (e.g. Kraut et al., 1998) has suggested that deficient social relationships and isolation (both of which the digital media have been accused of creating) would result in loneliness and the other negative emotional states outlined previously. Another reason for the inclusion of a measure of loneliness is that research has
suggested a strong link between experiences of loneliness and depression (e.g. Bragg, 1979; Young, 1982).

**UCLA Loneliness Scale:** The final psychological measure in this research is the revised UCLA loneliness scale (Russell *et al.*, 1980). This scale was chosen because it is a pre-validated measure and has demonstrated a high level of reliability and validity.

Reliability analysis was carried out on the UCLA Loneliness Scale (Russell *et al.*, 1980). The alpha reliability for this 20-item scale was .90, which indicates that the scale has a very good reliability. This is consistent with the original research developing this scale which had an alpha of .94 (Russell *et al.*, 1980). It is also supported by other research that has used this scale. Decaire (1999) found that the alpha number for the scale was .86. This supports the notion that the scale is internally reliable. No items needed removing from the scale. Guttman's split-half reliability was also calculated for the UCLA loneliness scale. The first half of the scale had an alpha of .82 and the second half had an alpha of .83. The overall alpha for the scale was .90, which again suggests that the scale has good reliability.

The scale has been designed to measure satisfaction and dissatisfaction social relationships and dissatisfaction. A factor analysis was performed to investigate the validity of the scale in the current research. The factor analysis identified that there were two factors in the scale. The first factor accounted for 36% of the variance and the second factor accounted for 17% of the variance. This shows that for the current study the scale is measuring two factors.
Table 8.4: The Rotated Factor Loadings for the UCLA Loneliness Scale

<table>
<thead>
<tr>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCLA: I feel in tune with the people around me</td>
<td>.53</td>
</tr>
<tr>
<td>I lack companionship</td>
<td>.15</td>
</tr>
<tr>
<td>There is no one I can turn to</td>
<td>.21</td>
</tr>
<tr>
<td>I do not feel alone</td>
<td>.59</td>
</tr>
<tr>
<td>I feel part of a group of friends</td>
<td>.69</td>
</tr>
<tr>
<td>I have a lot in common with the people around me</td>
<td>.66</td>
</tr>
<tr>
<td>I am no longer close to anyone</td>
<td>.21</td>
</tr>
<tr>
<td>My interests and ideas are not shared by those around me</td>
<td>0</td>
</tr>
<tr>
<td>I am an outgoing person</td>
<td>.59</td>
</tr>
<tr>
<td>There are people I feel close to</td>
<td>.74</td>
</tr>
<tr>
<td>I feel left out</td>
<td>.14</td>
</tr>
<tr>
<td>My social relationships are superficial</td>
<td>.11</td>
</tr>
<tr>
<td>No one really knows me well</td>
<td>.18</td>
</tr>
<tr>
<td>I feel isolated from others</td>
<td>.15</td>
</tr>
<tr>
<td>I can find companionship when I want it</td>
<td>.57</td>
</tr>
<tr>
<td>There are people who really understand me</td>
<td>.73</td>
</tr>
<tr>
<td>I am unhappy being so withdrawn</td>
<td>0</td>
</tr>
<tr>
<td>People are around me but not with me</td>
<td>.14</td>
</tr>
<tr>
<td>There are people I can talk to</td>
<td>.78</td>
</tr>
<tr>
<td>There are people I can turn to</td>
<td>.80</td>
</tr>
</tbody>
</table>

The factor loadings for each of the items on the UCLA Loneliness scales are presented in Table 8.4. All of the scale items load satisfactorily on one of the two factors. Some of the scale items load strongly on one factor and weakly on the other factor but in all cases it is clear which factor they load on. When the scale items are compared there appears to be a distinct pattern of the factor loadings on this scale. As Table 8.4 suggests the first factor appears to be social loneliness and the second factor appears to be emotional loneliness. As was discussed in Chapter 4, loneliness can be experienced in various ways. Items which load heavily on the first factor are items such as “There are people who really
understand me” and “There are people I can talk to” and these are characteristic of social loneliness. Items which loaded heavily on the second factor were items such as “I feel left out” and “I feel isolated from others” are characteristic of emotional loneliness.

The Scree plot (Figure 8.4) for the factor analysis of the UCLA Loneliness scale supports the notion that the scale consists of two factors. As Figure 8.4 illustrates, there are two factors on the slope before the plot levels out and so the later factors are not contributing reliable variance to the scale.

Figure 8.4: Scree Plot for the UCLA Loneliness Scale Factor Analysis

Summary

The design and structure of the questionnaire have also been discussed with details being given about the reliability and validity of the measures. The following chapter will present the findings from the preliminary analysis of the data. This will include descriptive statistical analyses and bivariate analyses.
Chapter 9: The Digital Experience of Young People

Overview

In this chapter, some of the major characteristics of young people's experience of the digital media are described. Both the Internet and Mobile Phones are covered. Major features of the data are described to establish in detail the patterns of use of these digital media. Later chapters will look at interrelationships in the use of digital media and the interrelationships between the use of digital media and socio-psychological variables such as psychological well-being and social support.

The overriding aim is to understand the important features of digital communications in order to understand the extent of and penetration of the digital communications in the lives of young people. While the apparent ubiquitous nature of these media might encourage the belief that they are central in the lives of most young people, this chapter documents and quantifies this. The research has yielded large amounts of data from the target population their main features will be presented as systematically as possible.

Trends in Experience of the Internet

This section focuses in the extent of and the nature of involvement in the Internet. This data is key to establishing the characteristics of Internet use for young people. Given that one of the assumptions which guided this research is that the use of digital communications media may be conceived as being integral with the general lifestyle of this age group, it is important to establish the extent of this. To anticipate the data somewhat, related to this is the view that the use of digital communications will relate to the general social
characteristics of participants. For these purposes, gender may be regarded as an overriding lifestyle characteristic. For that reason, gender trends in the use of the Internet are explored.

**Use**

A number of interesting trends were found in the use of the Internet by males and females. The cross-tabulation in Table 9.1 illustrates that 97.8% (n = 181) of the male participants had used the Internet at the time that the research was carried out. Only four males in total had never used the Internet (2.2%). Even fewer had never used the internet at the time of the research. Only 0.8% (n = 2) of the female participants had not used the Internet. That is 99.2% (n = 256) of the female participants who had used the Internet at least once before taking part in this research. Overall, 98.6% (n = 437) of the participants in the current sample had used the Internet.

**Table 9.1: A Cross-Tabulation of Gender and Internet Use**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Have you ever used the Internet?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Total</td>
</tr>
<tr>
<td>Male</td>
<td>181</td>
<td>4</td>
<td>185</td>
</tr>
<tr>
<td></td>
<td>97.8%</td>
<td>2.2%</td>
<td>100%</td>
</tr>
<tr>
<td>Female</td>
<td>256</td>
<td>2</td>
<td>258</td>
</tr>
<tr>
<td></td>
<td>99.2%</td>
<td>3.5%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>437</td>
<td>6</td>
<td>443</td>
</tr>
<tr>
<td></td>
<td>98.6%</td>
<td>1.4%</td>
<td>100%</td>
</tr>
</tbody>
</table>

There was no statistically significant relationship between the gender of the participants and whether they had used the Internet before (two-tailed Fisher exact \( p = .241 \)).
While the numbers not using the Internet are small, it is interesting to note that 100% (n = 243) of the sample collected from colleges in the East Midlands had used the Internet. All of the participants from Dallam School 6th Form College had used the Internet. All of those with no experience of the Internet were students at Lancaster and Morecambe College. There only 96.4% (n = 162) had used the Internet prior to the time of the research. Whether or not this trend could be generalized cannot be assessed from this data. It would not be wise to draw inferences from this data given the small numbers involved. The participants who had not used the Internet were actually quite young. They were 17 years (n = 1), 18 years (n = 2) and 19 years (n = 1). This refutes any suggestion that greater familiarity with the Internet would be characteristic of the younger sample. (The remaining cases (n = 2) were missing data.)

Virtually all participants had experience with the Internet. Hence virtually all of the following discussion is not about Internet use versus no Internet use but gradations of Internet use.

Because the use of e-mail is central to the conceptualization of the Internet as a social medium which underlies this research, figures on access to e-mail are especially relevant. For the current sample, 83.6% (n=368) indicated that they had a private e-mail address – such as the ones on Internet Service Providers websites for example Wanadoo, Hotmail or AOL rather than ones attached to the specific institutions (e.g. a college or university e-mail address). The figures are similar irrespective of gender - 84.8% (n = 156) of the male participants and 82.8% (n = 212) of the females had a private e-mail address. As Table 9.2 illustrates, there was not a statistically significant difference between the observed and expected frequencies male and female participants in whether they had a private e-mail address ($\chi^2 = .304$, df = 1, p = 582).
Table 9.2: A Summary table for the Chi-Square test examining the interaction between gender and having a private e-mail address

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>df</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>.304</td>
<td>1</td>
<td>.582</td>
</tr>
<tr>
<td>Number of cases</td>
<td>440</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of Use

The majority of participants had been using the Internet for more than a few months - 95.5% (n = 419) of all the participants who had used the Internet indicated that they had been using it for over 6 months. Males and females were very similar in this regard: 95.6% (n = 175) of the male participants and 95.3% of females indicated that they had been using the Internet for over 6 months.

Table 9.3: The mean responses for the Male and Female participants to the question “How long have you used the Internet?”

<table>
<thead>
<tr>
<th></th>
<th>Number of cases</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>183</td>
<td>2.80</td>
<td>.497</td>
</tr>
<tr>
<td>Female</td>
<td>256</td>
<td>2.79</td>
<td>.511</td>
</tr>
</tbody>
</table>

There were no statistically significant differences ($t = .291$, $df = 437$, two-tailed $p = .771$) between the average length of time that the male participants had used the Internet ($M = 2.80$, $SD = .497$) and the length of time that the female participants had used the Internet ($M = 2.79$, $SD = .511$). The mean responses illustrated in Table 9.3 for the two genders suggests that the participants have on average had between 6 months and 1 years experience with the Internet.
Location of Internet Use

Given the fact that virtually the entire sample had experience of the Internet; the next question is where they access the Internet from? Unlike many of the non-digital media such as television, video and the cinema, there is a variety of different types of locations for Internet use. These are explored in this section.

College: The most common location for Internet use was the college environment. A very substantial majority of 90% (n = 396) of the sample used the Internet in their college. There was no gender trend. For males, 89.1% (n = 164) used the Internet at college. For females, 90.6% (n = 232) accessed the Internet at college. This difference is not statistically significant ($\chi^2 = .266, df = 1, P = .606$).

Not only was the college environment the commonest site of Internet use, but it is used with fairly high levels of frequency. Indeed, 80.5% (n = 340) of the sample used the Internet at college and indicated that they used it either sometimes or frequently. 79.8% (n = 194) of the female participants indicated that they used the Internet at college sometimes or frequently. This figures was much the same for male participants since 80.2% (n = 146) of the sample indicated that they used the Internet sometimes or frequently at college. The difference between males and females was not statistically significant ($t = 1.08, df = 406, P > .05$).

Home: Nearly as many had access to the Internet at home. As Table 9.4 indicates, 86.4% (n = 159) of the male participants and 81.6% (n = 209) of the female participants had access to the Internet at home (overall n = 368 or 83.6%). This is a high
proportion of the sample and it illustrates the degree of penetration of the Internet into the homes of young people in further education.

Table 9.4: A Cross-Tabulation for the gender of the participants with whether they have access to the Internet at home

<table>
<thead>
<tr>
<th>Gender</th>
<th>Do you have access to the Internet at home?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Male</td>
<td>159</td>
</tr>
<tr>
<td>Female</td>
<td>209</td>
</tr>
</tbody>
</table>

Not only does a large proportion of the sample have access to the Internet at home but they also seem to be very likely to use it at home. As many as 82.4% (n = 357) indicated that they used the Internet at home either sometimes or frequently. 19.6% of the sample indicated that they sometimes used the Internet at home and a further 62.8% of the sample indicated that they used the Internet at home frequently.

In terms of gender, female participants were slightly less than male participants to use the Internet at home. For females, 82% (n = 205) used the Internet frequently or sometimes at home. The corresponding figure for male participants was 83.1% (n = 152). There was no significant gender difference in this regard. This is probably best demonstrated by converting Item 13.2 into a scale with 1 indicating that it was never used and 4 indicating that it was used frequently. The means are shown in Table 9.5 (below). The mean response was 3.32 for the male participants and 3.29 for the female participants. The mean response for the male participants (M = 3.32, SD = 1.070) is not significantly higher (t = .251, df = 406,
two-tailed $p = .802$) than that of the female participants ($M = 3.29$, $SD = 1.078$).

Table 9.5: A summary of the mean responses for the male and female participants for how often the access the Internet from a number of locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Gender</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>College</td>
<td>Male</td>
<td>3.20</td>
<td>.90</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3.10</td>
<td>.91</td>
</tr>
<tr>
<td>Home</td>
<td>Male</td>
<td>3.32</td>
<td>1.07</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3.29</td>
<td>1.08</td>
</tr>
<tr>
<td>Library</td>
<td>Male</td>
<td>1.89</td>
<td>1.02</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.89</td>
<td>1.02</td>
</tr>
<tr>
<td>Internet Café</td>
<td>Male</td>
<td>1.16</td>
<td>.47</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.18</td>
<td>.51</td>
</tr>
<tr>
<td>Mobile Phone</td>
<td>Male</td>
<td>1.41</td>
<td>.78</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.34</td>
<td>.74</td>
</tr>
</tbody>
</table>

**Library:** A library was found to be one of the least popular locations to access the Internet. The majority of the same (70.8%, $n = 299$) used this location rarely or never. Of course, this still means that 29.2% ($n = 123$) of the sample indicated that they used the library sometimes or frequently. But the trend is emphasised by the fact that only 19.4% ($n = 82$) indicated that they only used the Internet in a Library. Converting answers to Item 13.3 into a numerical scale from 1 to 4, as Table 9.5 indicates both the male and the female participants had a mean response of 1.89. Due to the means being equal, it was inappropriate to test for statistical significance.

**Internet Cafés:** Internet cafes are an uncommon location for Internet use. The majority (96.4%, $n = 403$) of the participants in the current research indicated that they used Internet Cafés rarely or never. This might be linked to their student status and restricted incomes. It is important to note that 80.5% ($n = 359$) indicated that they never used Internet Cafés. Of the male participants,
97.2% (n = 171) indicated that they only used Internet cafes rarely or never. This figure was slightly lower for the female participants. Of these, 95.9% (n = 232) indicated that they used Internet Cafes rarely or never.

This is not an unexpected finding because within the local areas of all of the colleges there is little provision of Internet cafes. However, there is at least one Internet café within 3 or 4 miles of each location so it was a valid location to investigate. As the mean responses on the four-point scale of frequency of use in Table 9.5 illustrate, there is a slight difference between the two genders. However, the mean response for male participants (M = 1.16, SD=.474) was not significantly lower (t = -.491, df = 406, two-tailed p = .624) than the female participants (M = 1.18, SD = .509).

Mobile Internet: The final ‘location’ included in the present research for Internet use was the mobile phones. It might be anticipated that the rather limited service and relatively high cost of accessing the Internet from a mobile phone would result in low levels of use. This turned out to be the case as 92.7% (375) of the sample rarely or never used WAP (mobile Internet) services. This figure is not surprising due to the current restrictions and cost of accessing the Internet from a mobile phone. Figures for males and females were very similar - 88.7% (n = 157) of the male participants indicated that used a mobile rarely or never to access the Internet. The corresponding figures for the female participants were as slightly higher with 90.4% (n = 218). This trend is also demonstrated by the means on the frequency of use scale illustrated in Table 9.5 However, the male participants responses (M=1.41, SD=.776) were not significantly higher (t = 1.01, df = 406, two-tailed p = .313).
Inevitably, technological and economic developments may alter these figures dramatically. But they confirm that at the time of this research, the mobile phone has a relatively minor impact compared with landline based Internet access. In comparison, for young people in the educational context, Internet access via their educational establishment and at home is by far the most common way of accessing Internet services. Libraries, Internet Cafes, and mobile phones are used by a small minority in comparison.

**Types of Use**

More than any medium of mass communication before it, the Internet has a variety of obvious functions. Underlying the present research is the belief that the richness of the Internet in this regard should be captured by the data as far as is practicable. Shopping, entertainment, Chatrooms, E-mails, banking, and education were identified for attention in this research. This is not a complete list but is an apposite one for the sample in question and the style of research. Participants were asked (Question 12) to indicate what online resources, if any, they use. The mean responses given on a four-point scale of frequency of use of these aspects of Internet use is to be found in Table 9.6. The four point scale is scored 1 for never, 2 for rarely, 3 for sometimes and 4 for frequently.

**Shopping:** The mean response for the male participants about how frequently they used the Internet for shopping \((M = 2.04, \text{SD} = 1.008)\) was not statistically significantly different \((t = 1.608, df = 424, \text{two-tailed} p = .109)\) from that of females \((M = 1.88, \text{SD} = 1.033)\). Despite there not being a statistically significant difference between the genders the means do suggest a trend in the data.
The male participants do seem to use the Internet slightly more for shopping than the female participants. This might be due to differences in characteristics between the male and female participants. The data supports this assertion because the mean response for the male participants for how long they spent on the Internet shopping (M = 1.73, SD = .80) was statistically significantly higher (t = 2.74, df = 413, p < 0.01) than for the female participants (M = 1.53, SD = .69).

Table 9.6: A summary of the mean responses for the male and female participants for how often they use a range of resources on the Internet

<table>
<thead>
<tr>
<th>Resources</th>
<th>Gender</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>2-tailed Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping</td>
<td>Male</td>
<td>2.04</td>
<td>1.01</td>
<td>.109</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.88</td>
<td>1.03</td>
<td></td>
</tr>
<tr>
<td>Entertainment</td>
<td>Male</td>
<td>3.07</td>
<td>.96</td>
<td>.003</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.80</td>
<td>.95</td>
<td></td>
</tr>
<tr>
<td>Chatrooms</td>
<td>Male</td>
<td>2.19</td>
<td>1.02</td>
<td>.604</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.13</td>
<td>1.06</td>
<td></td>
</tr>
<tr>
<td>E-mail</td>
<td>Male</td>
<td>3.13</td>
<td>1.02</td>
<td>.124</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3.29</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td>Banking</td>
<td>Male</td>
<td>1.47</td>
<td>.84</td>
<td>.015</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.29</td>
<td>.71</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Male</td>
<td>2.66</td>
<td>.99</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3.20</td>
<td>.86</td>
<td></td>
</tr>
</tbody>
</table>

**Entertainment:** There is a clear and strong trend for males to use the Internet more for entertainment than females. The means in Table 9.6 suggest, there is statistically significant difference (t = 2.943, df = 424, two-tailed p = .003) between the mean response for the male participants (M =3.07, SD = .961) and the female participant’s (M = 2.80, SD = .953). This does not mean that the male participants are using the Internet for entertainment for longer periods of time. The means indicate that the male participants are indicating that they use the Internet more frequently for entertainment purposes than the female participants.
Chatrooms: The means in Table 9.6 indicate that there is a difference between the male and female participants in the frequency that they use the Internet for access to Chatrooms. However, the mean response for the male participants ($M = 2.19$, $SD = 1.021$) is not statistically significantly different ($t = .519, df = 424$, two-tailed $p = .604$) from that of females ($M = 2.13$, $SD = 1.061$). The means indicate that the male participants did not indicate more frequent use of chatrooms on the Internet than the female participants.

E-mails: The female participants mean response for the frequency that they use the Internet for e-mailing ($M = 3.29$, $SD = 1.008$) is not statistically different ($t = -1.543, df = 424$, two-tailed $p = .124$) from that of the male participants ($M = 3.13$, $SD = 1.109$). This suggests that on average, the participants have indicated that they use the Internet for e-mail between sometimes and frequently.

Banking: The mean response for the male participants about the frequency with which they use the Internet for banking ($M = 1.47$, $SD = .840$) is statistically significantly higher ($t = .2379, df = 349.44$ 2dp, two-tailed $p = .018$) than the mean response for the female participants ($M = 1.29$, $SD = .713$). The variances between the two groups were significantly unequal ($F = 14.166, p < .05$) so a t-test for unequal variances was used. Whilst it would appear that the male participants are using the Internet significantly more than females for banking, it is important to note that the mean response for both genders lies between the never and rarely categories. This suggests that whilst there is a statistically significant difference between the genders in the use of the Internet for banking, the actual frequency of Internet use for this reason is very low.
**Education:** The variances between the genders were statistically significantly unequal \((F = 7.774, p < .05)\) so a t-test for unequal variances was used. It was found that there was a statistically significant difference \((t = -5.843, df = 355.68\) 2dp, two-tailed \(p < .001)\) between the mean response of the male participants \((M = 2.66, SD = .99)\) and the responses of the female participants \((M = 3.20, SD = .862)\) for the frequency that the Internet was used for educational purposes. This suggests that the female participants are using the Internet for more academic purposes and the male participants are using it for more entertainment related purposes. It is important to note that the mean response for the female participants is in the sometimes category whereas the mean response for the male participants is in the rarely category.

**Duration of Use**

The amounts of time spent using the various Internet resources outlined in the previous section were also investigated. There is an important difference between the frequency that one uses resources on the Internet and duration of time that one uses resources for on the Internet. Perhaps in many ways, the duration of time spent using these resources is more important than how often they are used. For example, a person may only use the Internet for entertainment once a week but may spend over 5 hours using this resource in one sitting. Conversely, one may use the Internet 5 times a week for entertainment but only spend 15 minutes in each sitting.

Table 9.7 summarises the mean responses of the participants on a five-point scale for each of the online resources. Participants gave the approximate duration spent each week on each Internet
resource ranging from 1 for never and 5 for five or more hours a week.

**Shopping:** The mean response for the male participants (M = 1.73, SD = .794) was statistically significantly higher (t = 2.86, df = 424, two-tailed p < .05) than the mean response for the female participants (M = 1.52, SD = .690). This suggests that the male participants are using the Internet for longer than the female participants. However, both the male and the female participants' mean responses lie between the never and less than 1 hour a week.

<table>
<thead>
<tr>
<th>Resources</th>
<th>Gender</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>2-tailed Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping</td>
<td>Male</td>
<td>1.73</td>
<td>.79</td>
<td>.006</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.52</td>
<td>.69</td>
<td></td>
</tr>
<tr>
<td>Entertainment</td>
<td>Male</td>
<td>2.88</td>
<td>1.20</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.41</td>
<td>1.02</td>
<td></td>
</tr>
<tr>
<td>Chatrooms</td>
<td>Male</td>
<td>2.07</td>
<td>1.16</td>
<td>.218</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.97</td>
<td>1.13</td>
<td></td>
</tr>
<tr>
<td>E-mail</td>
<td>Male</td>
<td>2.62</td>
<td>1.10</td>
<td>.598</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.68</td>
<td>1.17</td>
<td></td>
</tr>
<tr>
<td>Banking</td>
<td>Male</td>
<td>1.34</td>
<td>.64</td>
<td>.017</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.20</td>
<td>.60</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Male</td>
<td>2.37</td>
<td>.95</td>
<td>.305</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.81</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

**Entertainment:** The variances for male and female participants were statistically significantly unequal (F = 8.12, p = .005) for the duration of entertainment variable. Consequently a t-test for unequal variances was used. It was found that the mean response for the male participants (M = 2.88, SD = 1.204) was statistically significantly higher (t = 4.221, df = 339.70, two-tailed p < .001) than the mean response for the female participants (M = 2.41, SD = 1.024). This suggests that the male participants used the Internet
more for entertainment purposes than the female participants. This is consistent with the findings outlined earlier in this chapter regarding the frequency of the use of this online resource.

**Chatrooms:** As the means displayed in Table 9.7 suggest, the mean responses for the use of the Internet for chatrooms are very similar between the male and female participants. The mean response for the male participants ($M = 2.07, SD = 1.163$) was not statistically significantly higher ($t = .941, df = 424$, two-tailed $p = .347$) than the mean response for the female participants ($M = 1.97, SD = 1.125$) for the amount of time spent in chatrooms per week. Again though, the mean responses suggest that it is less than 1 hour a week that is spent on the Internet for this reason.

**E-mail:** Again, as the mean responses outlined in Table 9.7 show, there is very little difference between the mean responses for the male and female participants. The mean response for the male participants ($M = 2.62, SD = 1.097$) was not statistically significantly lower ($t = -.562, df = 424$, two-tailed $p = .575$) than the mean responses for the female participants ($M = 2.68, SD = 1.168$). Whilst there are no statistically significant differences between the two means, it is interesting and important to note that both means suggest that the participants are using the Internet for e-mailing between 1 and 3 hours a week.

**Banking:** The male and female participants had statistically significantly unequal variances on the duration measure for banking ($F = 12.158, p = .001$). Consequently, a t-test for unequal variances was used. The data has shown that the mean response for the male participants ($M = 1.34, SD = .640$) and the mean scores for the female participants ($M = 1.20, SD = .602$) differed significantly ($t = 2.343, df = 364.95 \ 2dp$, two-tailed $p = .020$). This
suggests that the male participants used the Internet for banking for more time each week. This is consistent with the findings for the estimated frequency measure discussed earlier. The amount of time involved with Internet banking is not great. Participants are only using the Internet for less than an hour per week on average.

**Education:** The use of the Internet for educational purposes is substantially greater for females (Table 9.7). The average time spent by female participants (M = 2.81, SD = 1.006) was significantly higher (t = -4.552, df = 424, two-tailed p < .001) than the male participants (M = 2.37, SD = .951). This again is consistent with the findings of the estimated frequency for the use of the Internet for educational purposes discussed earlier in this chapter.

There seems to be a clearer pattern of gender different in terms of duration of Internet activity than for frequency. Males spend more time shopping on the Internet and use it for more time for entertainment than females. Females characteristically spend more time using the Internet for educational purposes.

**Perception of Internet Skill/knowledge**

One somewhat unexpected finding was that females tended to rate themselves as being more skilled with the Internet and more knowledgeable about it. The perceived skill/knowledge of the participants with the Internet was investigated using Question 17. The analysis is summarised in Table 9.8 (over page). The mean response for the female participants (M = 1.93, SD = .515) was statistically significantly higher (t = -5.53, df =376.72, two-tailed p < .001) than the mean response for the male participants (M = 1.65, SD = .553). The variances between the male and female
participants were statistically significantly unequal \((F = 34.16, p < .001)\) so a t-test for unequal variances was used.

**Table 9.8: A Summary table for the gender of the participants and how skilled/knowledgeable they perceive themselves to be with the Internet**

<table>
<thead>
<tr>
<th></th>
<th>Number of cases</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>184</td>
<td>1.65</td>
<td>.55</td>
</tr>
<tr>
<td>Female</td>
<td>257</td>
<td>1.93</td>
<td>.52</td>
</tr>
</tbody>
</table>

**Summary**

There have been several interesting trends which have been displayed in the data. One of the foremost trends to have been displayed has been the prevalence of the use of the Internet within the educational institutional context. This makes it different from other mass media for which there may be an educational aspect but it is not integral to them. The use of the Internet in the home context has also show prevalence in the data and compliments the use within the educational institution.

This prevalence has been very balanced between both genders with the male and female participants indicating similar levels of access at these locations. For college access 89.1% of the male participants indicated that they used the Internet at college compared to 90.6% of the female participants. These figures are similar for accessing the Internet from home with 86.4% of the male participants and 81.6% of the female participants indicating that they had Internet access at home.

The primary uses for the internet did display some gender differences. The main differences occurred in relation to the
perceived skill/knowledge with using the internet. Unexpectedly the female participants indicated higher levels of skill/knowledge than the male participants. Other features were that the male participants used the internet more for entertainment and shopping purposes than the females participants did. In turn, the female participants indicated that they used the internet more for educational purposes.

**Trends in Experience of Mobile Phones**

Research into the use of mobile telephones, as explained in Chapter 4, is not in great supply. There is little or no research from a social scientific perspective on this medium. Hence, the present research constitutes a rare opportunity to understand some of the basic features of Mobile Phone use and its role in social networks.

**Ownership:**

As with Internet use, the use of mobile phones is extremely common within the sample studied. This is a strong indication of the penetration of digital mobile communications into the lives of young adults. As Table 9.9 shows, 90.5% (n = 401) of the sample owned a mobile phone. There was a gender trend since fewer of the male participants (85.4%, n = 158) owned a mobile phone than female participants (94.2%, n = 243) of the female participants owned a mobile phone. This gender difference was very statistically significant ($\chi^2 = 9.68, df = 2, p = .002$). Of course, the difference between the genders is less than ten percent but is noteworthy since it may be the first indication of gender differences in terms of mobile telephone use.
Table 9.9: A cross-Tabulation for the gender of the participants and whether they own a mobile phone

<table>
<thead>
<tr>
<th>Gender</th>
<th>Do you have a mobile phone?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>158</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td></td>
<td>85.4%</td>
<td>14.6%</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>243</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>94.2%</td>
<td>5.8%</td>
<td></td>
</tr>
</tbody>
</table>

**Is it Always Turned On?**

Question 19 asked participants whether their mobile was always switched on or not. Unlike other text-based communication devices, a permanently switched on mobile telephone is indicative of the permanent social contactability and availability of the owner. The only other communications device that offers the same level of permanent contactability is the normal telephone although they are restricted by ‘wire’ connections. Nevertheless, land line connections require the user to be in a specific location (or locations). In other words, not only do mobile telephones speed up communication of all sorts compared to, say, letters or even e-mail, they ensure maximum contactability.

It is common in the age group for them to have their mobile switched on permanently (75.4%, n = 304). There was not a significant gender difference ($\chi^2 = .664$, $df = 1$, $p = .415$). Taking male participants first, 73.3% (n = 118) of all the participants had their mobile phones switched on all the time. The figure was very similar for the female participants (76.9%, n = 186). However, there was no significant association between gender and whether they have their mobile switched on at all times.
The financial resources of the young people in the sample are likely to be constrained by a number of factors. Perhaps most important is the financial dependency of this age group on parents. Such considerations had led to the inclusion of questions in the survey to establish something about the implications of this for access to mobile telephone services. Quite unlike the Internet for which there are available to this age group cost-free services (e.g. at college or unmetered Internet access at home), digital telephones can have considerable costs attached to their use.

**Contract:** Contract phones tend to offer more services such as Internet or WAP capabilities. Many of the major network providers offer contract deals which include ‘free’ calls, free SMS text-messages and/or Internet connection time on a set monthly tariff. An example of this would be a deal including 500 minutes per month of ‘free’ talk-time at off-peak times. This also includes 500 ‘free’ SMS text-messages per month and 50 minutes of free offpeak talk-time to other mobile networks. This package costs the user £20 per month.

Pay as you go (pre-pay) mobiles tend to be more restricted in their services though this might be expected to change rapidly. For the most part, contract mobile phones were uncommon in this age group. About three quarters of the sample (75.3%, n = 302) indicated that they were not on a contract for their mobile phone. Nearly 70% (n = 111) of the male participants indicated that they were not on a contract for their mobile phone. This is compared to 78.9% (n = 191) of the female participants who indicated that they were not on a contract.
This gender difference was statistically significant ($\chi^2 = 4.287, df = 1, p = .038$). So, not only was the use of contract payment mobile relatively uncommon in the sample, it was especially uncommon for females. Nevertheless, this leaves nearly a quarter of the sample (24.7%, n = 99) that have indicated that they are on a contract for their mobile phone. One implication of this might be that the preponderance of pre-pay mobile phones is indicative of financial constraints on the use of mobile telephones. It is generally the case that contracts become more economical above a certain level of use (e.g. £15-20/month). The data cannot reveal directly whether this is at the insistence of parents or a means of controlling costs by the teenagers themselves. The answer to this is supplied in the next analysis below.

**Payment:** While parents are probably a significant source of personal finance for most young people of this age, it is likely that the management of these finances is left to the young person themselves. In Question 21, participants were asked whether their parents paid the bills for the mobile phone. Overwhelmingly they did not with 81.8% (n = 327) of the sample who owned a mobile phone indicated that their parents did not pay the bills for the mobile.

Table 9.10: A Cross-Tabulation table for the gender and whether their parents pay their mobile phone bills

<table>
<thead>
<tr>
<th>Gender</th>
<th>Do your parents pay the bills for this?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Male</td>
<td>31</td>
</tr>
<tr>
<td>19.4%</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
</tr>
<tr>
<td>17.5%</td>
<td></td>
</tr>
</tbody>
</table>
As Table 9.10 illustrates, there was no gender trend in this 80.6% (n = 129) of the male participants and 82.5% (n = 198) of the female participants indicated that their parents did not pay the bills for their mobile phones ($\chi^2 = .226, df = 1, p = .634$).

**SMS Text Messages:**

Although it is not the only means of sending SMS text messages, the mobile telephone is by far the most popular means of transmitting and receiving such messages. As Table 9.11 illustrates, those participants who had phones overwhelmingly used them for sending text messages. The responses were emphatic in what they showed. There were no differences between the observed and expected frequencies for the male or the female participants in relation to using mobile phones to send SMS text messages.

**Table 9.11: A Cross-Tabulation between the gender of the participants and whether they use their mobile phone to send SMS text messages**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Mobile Phone</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>156</td>
</tr>
<tr>
<td></td>
<td>2.5%</td>
<td>97.5%</td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>234</td>
</tr>
<tr>
<td></td>
<td>2.5%</td>
<td>97.5%</td>
</tr>
</tbody>
</table>

Only 2.5% (n = 10) participants did not use a mobile phone to send SMS text messages. The remaining (n = 390) 97.5% of the sample indicated that they used a mobile phone to send SMS text messages. Equal frequencies of males and frequencies used text-messages via the mobile telephone (Fisher, 2-tailed, $p = 1.0$).
Quantity: On average, participants indicated that they sent between five and ten text-messages per day. The participants were asked to rate how many text messages they sent per day on a five-point scale with 1 representing none and 5 representing more than 20. The mean response for the five-point scale for this question was 2.49 (SD = .96). Despite the virtual saturation of the use of text-messaging in the present sample, the figures for numbers of text messages reveal a gender difference.

Table 9.12 summarises the mean response for the male and female participants regarding the numbers of SMS text messages they send per day. The variances for the male and female participants were statistically significantly unequal \((F = 5.53, p < .05)\) so a t-test for unequal variances was used. The mean for the female participants \((M = 2.61, SD = .991)\) was statistically significantly higher \((t = -3.18, df = 389.79, p = .002)\) than that for males \((M = 2.31, SD = .895)\) for the number of text messages are sent per day. The mean response places the figure for the numbers of text messages at between 1 and 10 text messages per day.

<table>
<thead>
<tr>
<th></th>
<th>Number of cases</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>172</td>
<td>2.31</td>
<td>.90</td>
</tr>
<tr>
<td>Female</td>
<td>246</td>
<td>2.61</td>
<td>.99</td>
</tr>
</tbody>
</table>

Functions/Uses

The next few of analyses concern the functions and uses of text messaging. Of particular interest is any evidence of gender differences which may extend the findings on general extent of use of text-messaging.
**Conversation:** Question 24.1 asked the participants to indicate how frequently they use SMS text messages for conversations. This could be seen as a substitute for or supplement to other forms of communication including face-to-face spoken conversation or telephone conversation. The data in themselves do not indicate which.

Overall, the mean response to this question was 3.19 on the four-point scale, which indicates that the participants on average used mobile phones for conversation between sometimes and frequently. There was, however, a considerable gender difference with greater levels of use of the text message as conversation among females.

As Table 9.13 (next page) illustrates, the mean response for the female participants (M = 3.34, SD = .869) was statistically significantly higher (t = -4.292, df = 387, p < .001) than the mean response for the male participants (M = 2.93, SD = 1.026). The extent of the difference can be seen from the fact that mean response for the male participants lies between the rarely and sometimes levels whereas that for females lies somewhere between the sometimes and frequently categories.

**Prior to other Communication:** The participants were also asked to indicate how frequently they used SMS text messages as a precursor to another form of communication such as a phone call. As Table 9.13 suggest, female participants (M = 3.01, SD = .949) were significantly (t = -3.47, df = 387, p = .001) more likely than males (M = 2.68, SD = .900) to use of text messages prior to another form of communication. The mean response for the female participants falls into the sometimes category whereas the mean response for the male participants suggests that they use text
messages rarely or sometimes prior to another form of communication.

Table 9.13: A summary of the mean responses for the male and female participants for what they use SMS text messages for

<table>
<thead>
<tr>
<th>What do you use SMS text messaging for?</th>
<th>Gender</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>2-tailed Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversation</td>
<td>Male</td>
<td>2.93</td>
<td>1.03</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3.34</td>
<td>.87</td>
<td></td>
</tr>
<tr>
<td>Prior to another form of communication</td>
<td>Male</td>
<td>2.68</td>
<td>.90</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3.01</td>
<td>.95</td>
<td></td>
</tr>
<tr>
<td>As a substitute to another form of communication</td>
<td>Male</td>
<td>2.73</td>
<td>.92</td>
<td>.072</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.91</td>
<td>.99</td>
<td></td>
</tr>
<tr>
<td>To seek advice/help</td>
<td>Male</td>
<td>2.58</td>
<td>.96</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3.09</td>
<td>.87</td>
<td></td>
</tr>
<tr>
<td>Just to make contact</td>
<td>Male</td>
<td>2.76</td>
<td>1.02</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3.23</td>
<td>.88</td>
<td></td>
</tr>
<tr>
<td>To pass on Joke messages</td>
<td>Male</td>
<td>2.29</td>
<td>1.04</td>
<td>.040</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.53</td>
<td>1.11</td>
<td></td>
</tr>
<tr>
<td>Receiving formal information</td>
<td>Male</td>
<td>2.00</td>
<td>.97</td>
<td>.251</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.12</td>
<td>1.04</td>
<td></td>
</tr>
<tr>
<td>Making social arrangements</td>
<td>Male</td>
<td>3.16</td>
<td>.99</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3.56</td>
<td>.78</td>
<td></td>
</tr>
</tbody>
</table>

Substitute for other Communication: The participants were asked in Question 24.3 to indicate the frequency that they use SMS text messages as a substitute to using another form of communication. Whilst the mean response for the female participants ($M = 2.91, SD = .989$) was higher than for the males ($M = 2.73, SD = .917$), the difference found was on the margins of statistical significance ($t = -1.804, df = 387, p = .072$). The mean response for both the male and female participants were between the rarely and sometimes categories.
**Advice:** The participants were asked if they used SMS text messages as a means of contacting people for advice and help (Question 24.4). The variances for the male and female participants were statistically significantly unequal \((F = 8.56, p < .05)\) so a t-test for unequal variances was used. The mean response for the male participants \((M = 2.58, \text{SD} = .955)\) was statistically significantly lower \((t = -5.36, df = 313.81, p < .001)\) than that for females \((M = 3.09, \text{SD} = .871)\) for whether they used SMS text messages for seeking advice. The mean response for the male participants was between the rarely and sometimes categories whereas the mean response for the female participants was between the sometimes and frequently categories.

**Contact:** The participants were asked to rate the frequency with which they used SMS text messages just to make contact with people, through boredom or whatever (Question 24.5). Again, the variances for the male and female participants were statistically significantly unequal \((F = 5.63, p < .05)\) so a t-test for unequal variances was used. The mean response for the female participants \((M = 3.23, \text{SD} = .875)\) was statistically significantly higher \((t = -4.74, df = 300.92, p < .001)\) than that for the males \((M = 2.76, \text{SD} = 1.105)\).

This suggests that the female participants are using text messages more frequently to make contact with people than the male participants. Indeed, the mean response for the female participants lies between the sometimes and frequently categories whereas the mean response for the male participants lies between the rarely and sometimes categories.

**Jokes:** The participants were asked whether they used SMS text messages to send jokes and other bits of humour. Again, in line
with the trend for females to be more active in the field of text messaging, there was a trend towards greater use of the text message to send jokes. The mean response for the female participants (M = 2.53, SD = 1.108) is statistically significantly higher (t = -2.06, df = 387, p = .04) than that for males (M = 2.29, SD = 1.144). This suggests that the female participants are using SMS text messages more to pass on humour than the male participants. Both the mean response for the male and female participants fall between the rarely and sometimes categories in this case.

**Formal Information:** The participants were asked to indicate the frequency that that used SMS text messages to send or receive formal information such as work timetables and rotas (Question 24.6). Males (M = 2.00, SD = .974) and females (M = 2.12, SD = 1.04). did not differ significantly (t = -1.151, df = 387, p = .251). Again, though, the mean response for the female participants was higher than that of males. Nevertheless, mean responses for both the male and female participants were in the rarely category.

**Social Arrangements:** The participants were asked to indicate how frequently they use SMS text messages to make social arrangements (Question 24.7). Once again, the variances of the male and female scores were statistically significantly unequal (F = 9.75, p < .05) so a t-test for unequal variances was used. The mean responses for the male participants (M = 3.16, SD = .99) was statistically significantly lower (t = -4.30, df = 281.38, p < .001) than that of females (M=3.56, SD=.78). This suggests that the female participants use SMS text messages more then the male participants for making social arrangements. Again, the mean responses for both the male and female participants lie between the
sometimes and frequently categories suggesting that this is an important function of SMS text messages.

**Internet SMS Service:** Given the importance of the 'text message', a further question was included in the questionnaire concerning their use via the Internet itself. The participants in the current research were asked about whether they used an Internet SMS service send text messages to mobile phones. Such services are available from the websites for the major mobile phone service providers. These services are often free to use although they may be limited to a number of texts per month. The majority of the sample (59.5%, \( n = 238 \)) indicated that they did not use an Internet SMS service to send text messages.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Do you use an Internet SMS service?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Male</td>
<td></td>
</tr>
<tr>
<td></td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>58.8%</td>
</tr>
<tr>
<td>Female</td>
<td></td>
</tr>
<tr>
<td></td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>60.0%</td>
</tr>
</tbody>
</table>

Of course, this leaves a substantial minority of 40.5% of the sample who indicated that they did use Internet SMS services. As Table 9.14 indicates, similar proportions were found four males and females - 41.3% (\( n = 66 \)) of the males and 40% (\( n = 96 \)) of the females used Internet SMS services. As a consequence, 58.8% (\( n = 94 \)) of the male participants and 60% (\( n = 144 \)) of the female participants indicated that they do not use an Internet SMS service. The
difference is small and does not approach statistical significance ($\chi^2 = .062, df = 1, p = .803$).

Summary

The use of the Internet by the sample has shown some important trends. It would appear that the primary locations for accessing the Internet are at college and in the home irrespective of gender. Other location such as Internet Cafés, libraries and Mobile Internet were shown to be much less popular. The male and female participants were very similar in whether they had a private e-mail address and the amount of time they had been using the Internet. However, the females feel more confident and skilful with the Internet than the male participants did.

Given the general similarities between male and females participants in terms of Internet use, the fact that female participants have greater confidence with the digital media may suggest that traditional gender differences in regard to technological innovations simply do not apply to the Internet.

Gender differentials in Internet usage suggest that patterns of usage may be important. Male participants used the Internet more frequently and longer than the female participants for shopping, entertainment and banking. Crucially, female participants used the Internet more and for longer than males for study/educational purposes. While females used e-mail more and for longer than males, these differences were not statistically significant.

The evidence of gender patterns in usage of the digital media applied equally and, perhaps, more consistently to mobile telephones. Female participants indicated that they use mobile
phones more frequently than males did for the entire range of functions considered in the questionnaire. Significant differences indicating higher levels in females were found for the number of SMS text messages sent per day, using SMS text messages for conversation, and making social arrangements.

Overall, the picture is of high levels of saturation of the digital communications media. At the same time, males and females seem to be distinct subcultures in terms of the use of digital media. The differences are not ones which could be explained in terms of technology phobia on the part of females, quite the reverse. Female participants have a greater confidence, knowledge and use of mobile phones compared with males. For the sample, the proportions of ownership for a mobile were similar between the male and female participants so confidence and knowledge cannot be explained by a lack of ownership in the male sample. One way of describing it would be an under-exploitation of the mobile phone by the male participants. An alternative formulation would be that digital communications technology is more integrated into the social and educational spheres of the lives of young women. Young men rely more on the digital media for entertainment.

The following chapter presents the findings from the main analysis in this thesis.
Chapter 10: Multiple Regressional Analyses of the Digital Media use and their relation to Social Well-being

Overview

This chapter presents the primary analysis and will discuss the findings of a multivariate analysis of the relationships between the psychological well-being (as discussed in Chapter 3) and the range of digital communications, demographic and other variables which were included in the research materials. Like all of the analyses in this thesis, the multivariate analyses were conducted using SPSS version 11.1. The chapter presents the findings for each of the main psychological well-being variables as the dependent variable and the predictor variables. This chapter also offers some comment on the implications of the findings.

The Structure of the Multiple Regressions

Choosing the model for the analysis involved several considerations:

- That the demographic variables should be taken into account as ‘control’ variables.
- That social support is a key variable in the potential impact of any adverse influences of new technology.
- That the main purpose of the analysis is to find the best predictors of psychological well-being rather than, say, predicting psychological well-being as closely as possible. That is, the analysis is intended to a means of identifying the key socio-psychological variables.
Bearing these considerations in mind, it was decided to enter the independent variables in key blocks and to employ stepwise multiple regression within each block to identify the best set of independent predictors.

Figure 10.1: A Flow Diagram for the Structure of the Multiple Regressions

As figure 10.1 illustrates, the first block of the multiple regression consisted of demographic variables as discussed in Chapter 8. The second block in half of the multiple regressions consisted of the scores from the social support measure (item 26) on the questionnaire. The third block consisted of the variables relating to
the frequency of use for a series of Internet resources. Examples of these resources would be shopping and e-mail. This block consisted of the variables from item 12 on the questionnaire. The *fourth block* consisted of the variables relating to where the Internet was being accessed. These variables appear as item 13 on the questionnaire. Examples of these would be from the school/college or at home. The *fifth block* was comprised of the variables relating to the duration of Internet use for the same resources outlined in the third block of the multiple regression. This block contained the variables from item 14 on the college version of the questionnaire.

The *sixth block* that was entered into the multiple regressions was comprised of the variables regarding the frequency of the type of use for Internet chatrooms. These were the variables from item 15 on the questionnaire. The *seventh block* contained the variables related to the quantity of SMS text messages being sent and what these SMS text messages were being used for. This block consisted of the variables from items 23 and 24 of the college version of the questionnaire (See Appendix 2).

It was decided to carry out the analyses twice. One version of the analysis was precisely as described above while the second version of the analysis omitted social support as an independent variable. This analysis followed the same structure for the multiple regressions with the exception that only six blocks were entered into the analysis. These analyses reveal the relationship between the independent predictor variables and the dependent variable ignoring any role that social support might play in the relationships. In this way, any mediating influence of the social support variables would be removed. As will be outlined later in this chapter, the social support measure has a strong relationship to the dependent
variables so it was important to check for any suppressor or confounding influences it had on the relationships found in the regression. The analyses which do not include social support will be presented first.

**Social Well Being Multiple Regressions not including Social Support**

In this section we will examine the relationships between digital media use and the other variables omitting social support.

**Depression**

In a stepwise multiple regression, accessing the Internet from a library was entered first and it accounted for 2.2% of the variance in depression levels ($F_{1.377}, p < 0.5$). The use of Internet chatrooms for passing time was entered second and explained a further 3.1% of the variance ($F_{1.376}, p < .01$).

The first predictor of depression when social support was not included in the multiple regression was accessing the Internet from a library. Interestingly, accessing the Internet from a library has a positive relationship with depression ($\beta = .138, p < .05$), indicating that higher levels of depression were associated with increased use of a library as a location for accessing the Internet.

The second predictor of the levels of depression was using Internet chatrooms just to pass time. This relationship was again a positive one ($\beta = .178, p < .01$) suggesting that increased levels of depression in the participants is associated with using Internet chatrooms just to pass time more frequently. It is possible that passing time is generally associated with a lack of stimulation. The
actual act of passing time might be more important than the medium chosen to for this purpose.

Anxiety

In a stepwise multiple regression accessing the Internet from a library was entered first and it explained 6.2% of the variance \((F_{1.378}, p < .001)\). The amount of time spent on the Internet for banking was entered second and this explained 1.7% of the variance \((F_{1.377}, p < .05)\). The number of texts sent per day was entered third and this accounted for a further 1.8% of the variance \((F_{1.376}, p < .05)\). Using SMS text messages to pass on joke messages was entered fourth and explained 2% of the variance \((F_{1.375}, p < .05)\).

The first predictor of anxiety when social support was not included in the multiple regression was accessing the Internet from a library. As Table 10.1 indicates (Page 191), the beta coefficient for this relationship is a positive one \((\beta = .230, p < .001)\). This would suggest that increased frequency of using a library as a location to access the Internet from is associated with higher levels of anxiety.

The second predictor of the levels of anxiety is the duration of time spent using the Internet for banking purposes. As the beta coefficient (Table 10.1, p191) indicates, this relationship is a positive one \((\beta = .139, p < .05)\). This would suggest that increased time spent using the Internet for banking purposes is associated with higher levels of anxiety. This relationship would appear to be an unexpected phenomenon in the data. It is difficult to identify why this should be the case. This relationship might rise from the likelihood that using the Internet for banking purposes is a
solitary behaviour. It is unlikely that it would be done when with a group of friends.

The target sample might also be influencing this trend in the data. It is likely that college students do not come from a demographic that is financially stable and buoyant. Therefore it is likely that financial concerns are one of the main issues for the participants. It is therefore possible that the anxiety is caused by the financial situation rather than the act of using the Internet for banking purposes.

The third predictor of the levels of anxiety in the participants was the quantity of SMS text messages that are sent each day. As Table 10.1 illustrates, the relationship between the two variables is a negative one (\(beta = -.197, p < .01\)). This suggests that a greater number of SMS text messages sent per day is associated with lower levels of anxiety. Due to the social nature of SMS text messaging this finding is not unanticipated. It is possible that the SMS text messages serve to facilitate social support which has been shown to have a reducing influence on negative psychological well-being.

The fourth and final predictor of the levels of anxiety reported by the participants is how frequently they use SMS text messages to pass on joke messages. Again, the beta coefficients indicate that this relationship is a positive one (\(beta = .155, p < .05\)). This suggests that passing on joke messages is associated with higher levels of anxiety. It is possible that the lack of input into the message serves to reduce the involvement in the communication. Passing on a message does not involve the same interaction and thought as writing a ‘normal’ message to someone. To pass on this kind of message it only requires the person to select the recipient or
recipients for the message and then click the 'send' option on their phone.

**Table 10.1: A Summary Table Illustrating the Statistically Significant Predictors for each of the Dependent Variables without Social Support being included in the Multiple Regression**

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Stress</th>
<th>Social Loneliness</th>
<th>Emotional Loneliness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>-.160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accessing the Internet from a Library</td>
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<td>.230</td>
<td></td>
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<td>.160</td>
</tr>
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</tr>
<tr>
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<td>Using the Internet for Banking</td>
<td></td>
<td></td>
<td>.139</td>
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<tr>
<td>Using Chatrooms to Pass Time</td>
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<td></td>
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<td>Using SMS text-messages for Conversation</td>
<td></td>
<td></td>
<td>.146</td>
<td>-.177</td>
<td></td>
</tr>
<tr>
<td>Using SMS text-messages for Receiving Formal Information</td>
<td></td>
<td></td>
<td></td>
<td>.132</td>
<td></td>
</tr>
<tr>
<td>Using SMS text-messages for Passing on Joke Messages</td>
<td></td>
<td></td>
<td>.155</td>
<td>.153</td>
<td></td>
</tr>
<tr>
<td>Quantity of daily SMS text-messages sent</td>
<td>-.197</td>
<td>-.178</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***All values are Beta coefficients.***

**Stress**

In a stepwise multiple regression using the Internet for reference was entered first and explained 1.9% of the variance ($F_{1,277}, p <$
.05). Using SMS text messages for passing on joke messages was entered second and accounted for 1.9% of the variance \((F_{1.376}, p < .05)\). The quantity of SMS text messages sent each day was entered third and explained a further 1.5% of the variance in stress levels \((F_{1.375}, p < .05)\). Using SMS text messages for conversation was entered fourth and explained 1.6% of the variance \((F_{1.374}, p < .05)\).

The first predictor of stress when social support was omitted form the multiple regression was using the Internet for reference purposes. The beta coefficient indicates that this relationship is a positive one \((\beta = .167, p < .01)\). This suggests that increased levels of stress are associated with increased frequency of using the Internet for reference purposes. It is possible that due to the target population being from an educational setting, these levels of stress are influenced by the work requirements. It is therefore possible that more frequent use of the Internet for reference purposes is characteristic of stressed and busy students rather than a consequence of using the Internet for this purpose.

The second predictor of the levels of stress in the participants was using SMS text messages to pass on joke messages. As was reported for the previous measures of psychological well-being, this relationship is a positive one \((\beta = .153, p < .05)\). This would suggest that increased levels of stress are associated with a greater frequency of passing on joke messages. As was suggested previously, this could be due to the lack of interaction and involvement required for just forwarding a message to someone.

The third predictor of stress levels in the participants was the quantity of SMS text messages sent per day. This relationship is a negative one \((\beta = -.178, p < .01)\) which would seem to suggest that higher levels of stress in the participants is associated with
lower quantities of SMS text messages being sent per day. This would therefore seem to suggest that sending SMS text messages is a behaviour that can promote increased psychological well-being.

It is difficult to say whether those people who send more SMS text messages per day are doing so because they have a larger social network. This has been linked to greater levels of social support and consequently decreased levels of negative psychological well-being. It is possible however, that those participants who send greater quantities of SMS text messages are just sending them to one or two people. The measure in the current research was not designed to be sensitive to this so no firm claims can be made on this point.

The fourth predictor of stress levels in the participants is the frequency that SMS text messages are used for conversation. This relationship is a positive one (\( \beta = .146, p < .05 \)) which suggests that increased levels of stress is associated with increased use of SMS text messages for conversation.

**Social Loneliness**

In a stepwise multiple regression using the Internet for e-mail was entered first and explained 2.3% of the variance in social loneliness \((F_{1.276}, p < .05)\). Using text messages for conversation was entered second and it explained a further 2.1% of the variance \((F_{1.375}, p < .05)\). Receiving formal information through SMS text messages was entered third and explained a further 1.6% of the variance \((F_{1.374}, p < .05)\).

The first predictor of social loneliness when social support is not included in the multiple regression is using the Internet for sending and receiving e-mails. As the beta coefficient displayed in table 10.2
indicates, this is a negative relationship \((\beta = -.142, p < .05)\) which suggests that higher levels of loneliness are associated with lower levels of using the Internet for e-mailing. This finding is not unanticipated because e-mail is a social medium perhaps not unlike letter writing. However it has a much more instantaneous nature than letter writing. This might explain why increased use of e-mail has an association with lower levels of loneliness.

The second predictor of social loneliness is using SMS text messages for conversation. Unlike the relationship between stress and using SMS text messages for conversation, this relationship is a negative one \((\beta = -.177, p < .01)\). This would suggest that lower levels of loneliness are associated with increased frequency of using SMS text messages for conversation. This contradicts the previous finding for the relationship between stress and using SMS text messages for conversation. It would appear that the association that appears for social loneliness is not shared with regard to the levels of stress reported by the participants.

This is interesting because it suggests that there is a positive influence on loneliness from using SMS text messages for conversation but not for stress. This could be explained by the reasons behind using SMS text messages for conversation. It is possible that using SMS text messages for conversation is characteristic of lonely and stressed individuals and whilst it serve to reduce loneliness it fails to reduce stress. It is difficult to comment on this though without knowing more information about why the SMS text messages are being used for conversation in the first place. It is possible that increased levels of stress with work or whatever led to the increased use of SMS text messages for conversation rather than the other way.
As was discussed in relation to the measure of stress, it is possible that conversation via SMS text messages acts as a social interaction and bolsters the participants against loneliness without having the same effect on stressors. It is difficult to identify from the data collected what it is that separates these two measures of psychological well-being.

The third predictor of social loneliness when social support is not included in the multiple regression is using SMS text messages for receiving formal information. The relationship between the two variables is a positive one ($\beta = .132, p < .05$). This would suggest that higher levels of loneliness are associated with higher levels of using SMS text messages to receive formal information. As has been discussed with regard to the previous multiple regression for social loneliness, it is possible that formal information does not carry the same social interactional content that using SMS for other purposes offers. Indeed, it has already been found that having conversations via SMS messages has a negative relationship with social Loneliness.

**Emotional Loneliness**

In a stepwise multiple regression gender was entered first and explained 2.3% of the variance in the second loneliness factor ($F_{1.377}, p < .05$). Accessing the Internet from a library was entered second and explained a further 2.6% of the variance in the second loneliness factor ($F_{1.376}, p < .01$).

The first predictor of emotional loneliness when social support was not included in the multiple regression was gender. There is a negative relationship between gender and the reported levels of emotional loneliness ($\beta = -.160, p < .01$). This indicates that the
female participants (coded '2' in the analysis) have reported generally lower levels of emotional loneliness than the male participants. This is interesting because it suggests that the male participants are indicating lower levels of psychological well-being. It does not however, indicate whether the male participants have reported levels of loneliness that attain the clinical level.

The second predictor of emotional loneliness was accessing the Internet from a library. As has been reported before, this relationship was a positive one (beta = .160, \( p < .01 \)). The positive relationship would suggest that again, higher levels of loneliness are associated with increased use of the library location. This has been a persistent relationship through most of the multiple regressions for the dependent variables. This suggests that whatever the causes for this relationship are, there is a robust relationship there with most of the dependent variables.

So far this chapter has presented the findings for the multiple regressions which do not include social support as a variable. The findings for the multiple regressions when social support is entered as a variable will be presented now and the comparison between the two analyses will be examined.

Social Well Being Multiple Regressions including Social Support

Depression

Depression was assessed in terms of Factor 1 obtained in the analysis of the DAS Scale (see Chapter 5). Factor scores were used. In a Stepwise multiple regression for the dependent variable of
depression, social support was entered first and accounted for 6.1% of the variance \((F_{1.377}, p < .001)\). Accessing the Internet from a library was entered second and it explained 3.2% of the variance in depression \((F_{1.375}, p < .01)\). Using Internet chatrooms to pass time was entered third and this accounted for a further 2.2% of the variance in depression \((F_{1.374}, p < .01)\).

This suggests that the main predictor of the levels of depression for the college participants is the level of social support that they perceive they have. Importantly, as the beta coefficient illustrated in Table 10.2 \((p198)\) show, there is a negative relationship between the levels of social support and levels of depression for the participants \((\text{beta} = -.271, p < .001)\). The beta coefficients will be reported rather than b coefficients since they are standardized. This choice is justified since the main purpose of the analysis is to explore relationships rather than prediction. This finding linking depression and lack of social support reflects the previous literature on psychological well-being and social support and its functional components (e.g. Henderson, 1992, see Chapter 4). As discussed in Chapter 4, there is an established strong relationship between social support and a variety of indicators of psychological wellbeing.

The second predictor was the frequency that the participants accessed that Internet from a library. The standardized regression coefficients (beta coefficients) indicates that there is a positive relationship between the levels of depression and accessing the Internet from a library \((\text{beta} = .174, p < .01)\). Participants who access the Internet more from a library display higher levels of depression. At first sight, this seems to support concerns that Internet use is associated with poorer psychological well-being of the Internet users. However, the analysis does not establish a
evidence of a causal relationship. For example, one interpretation is that there is a link between the solitary nature of the library. Libraries are locations where conversation and social interaction are discouraged so may be used by more solitary individuals. Indeed, it could be no more different than using a book for reference in a library or just reading which is a central part of all academic research. It is important to note that this is just using the Internet in the library and does not indicate directly what sort of use is of the Internet.

The third predictor was using Internet chatrooms for passing time. The beta coefficient is positive which suggests that there is a positive relationship between using Internet chatrooms for passing time and the levels of depression (beta = .151, p < .01). This suggests that those participants who use Internet chatrooms more for passing time will show higher levels of depression than those who do not. At face value this would suggest that despite Internet chatrooms being a 'social' activity, they have a negative association with psychological well-being. However, doing things to pass the time seems to be a characteristic of boredom or 'not wanting to be bothered' to do something more active or demanding. This in turn appears to be characteristic of lower psychological well-being in general. In other words, the relationship seems to reflect the characteristics of depression rather than a causal influence of Internet use on depression.

Interestingly there is little difference in the findings between the multiple regression including social support and excluding social support. As Table 10.2 (p198) indicates, the beta coefficients were only slightly different for the two analyses and the same predictor variables and statistically significant relationships were reported.
The differences between the beta coefficients for the frequency of accessing the Internet from a library in the 2 tests did not differ statistically significantly \((p = .584)\). This trend was also repeated for using Internet chatrooms to pass time \((p = .703)\). When social support is included in the analysis, it is the largest predictor of the levels of depression. Importantly this relationship was negative indicating increased social support was associated with lower levels of depression. This would suggest that social support was more important in terms of depression than the digital media variables although this has little influence on the two variables which did indicate a statistically significant relationship.

**Anxiety**

Anxiety was measured as a component of the DASS21 scale. In a stepwise multiple regression social support was entered first and accounted for 5.3\% of the variance in anxiety \((F_{1.378}, p < .001)\). Accessing the Internet in a library was entered second and accounted for a further 6\% of the variance \((F_{1.375}, p < .001)\). Passing on joke SMS text messages was entered third and explained 1.4\% of the variance \((F_{1.374}, p < .05)\). Finally, the quantity of SMS text messages was entered fourth and explained a further 2.2\% of the variance \((F_{1.373}, p < .01)\).

Again it would appear that lack of social support is the main predictor of the levels of anxiety for the participants. The beta coefficient shown in Table 10.2 \((p198)\) indicates that this relationship is a negative one \((\text{beta} = -.301, p < .001)\) that suggests that those participants who display higher levels of anxiety are likely to report lower levels of social support. This supports the literature on psychological well-being and social support of which
anxiety is one of the functional components. This suggests that social support functions to reduce anxiety levels in the participants.

The second predictor was how frequently the participants accessed the Internet from a library. Again, the beta coefficient shows that this relationship is a positive one \( (\beta = .246, p < .001) \) which suggests that those participants who are accessing the Internet from a library more often will report higher levels of anxiety. Again it is important to stress that the current research does not control other factors that might be influential in this finding such as the reasons for using the library as a location for accessing the Internet. At face value this finding would suggest that the library is a location that can have a negative influence on the psychological well-being of the Internet user. Once again, such a claim of a causal influence is unsubstantiated and there may be a variety of reasons why aspects of Internet use are associated with increased levels of negative psychological well-being.

The third predictor was using SMS text messages to pass on joke messages. The beta coefficient for this relationship is positive \( (\beta = .187, p < .01) \) which suggests that those participants who use SMS text messaging to pass on joke messages are indicating higher levels of anxiety. SMS text messages are meant to be a social medium so this finding is contrary to expectation of the medium. However, it is important to take into account the fact that there is little involvement placed on an individual in just forwarding a message. No extra input is required so it might not contain the social involvement that a normal message would. There is little or no risk of rebuff or rejection from passing on a joke. There is no expectation that the receiver should reply on receipt of a joke unlike other forms of text message. In other words, passing on a joke
through SMS services is only a minimally social activity with no implications of reciprocity and little risk of adverse social responses. This might explain the current finding without recourse to adverse influences of the Internet on psychological-wellbeing.

This interpretation is supported by the fourth predictor of the levels of anxiety, which was the quantity of SMS text messages sent per day. The beta coefficient for this relationship \((beta = -.164, p < .01)\) is negative which suggests that those participants who are sending more SMS text messages per day are reporting lower levels of anxiety. For those lower on anxiety, this suggests that SMS text messaging serves as a social medium. Those higher on anxiety seem to be taking less social risks (of rejection or rebuff) simply by avoiding using SMS services. Anxiety and avoidance are generally linked. The association in no way indicates that SMS text messages are a harmful communications medium to the users.

As Table 10.2 (p198) indicates, when social support has been included in the multiple regression it would appear again to be the largest predictor of the levels of anxiety. Once again this relationship has been shown to be negative which suggests increased social support is associated with lower levels of anxiety. The relationships between the other predictor variables and anxiety have changed very little and the beta coefficients have remained similar and these relationships have remained statistically significant. The differences between the beta coefficients for accessing the Internet from a library \((p = .801)\), passing on joke messages \((p = .625)\) and the quantity of SMS text messages \((p = .613)\) all indicated that the changes were not statistically significant. This is important because it suggests that social support has little or no suppressing or third-variable influences on these relationships.
Table 10.2: A Comparative Summary Table Illustrating the Statistically Significant Predictors for each of the Dependent Variables with Social Support included/not included in the multiple regression

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>Depression</th>
<th>Anxiety</th>
<th>Stress</th>
<th>Social Loneliness</th>
<th>Emotional Loneliness</th>
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<td>Gender</td>
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<td></td>
<td></td>
<td></td>
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</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.160</td>
</tr>
<tr>
<td>Social Support</td>
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<td>-.301</td>
<td>-.254</td>
<td>-.309</td>
<td>-.399</td>
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<td>.246</td>
<td></td>
<td>.153</td>
<td>.198</td>
</tr>
<tr>
<td></td>
<td>.138</td>
<td>.230</td>
<td></td>
<td></td>
<td>.160</td>
</tr>
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<td>Using the Internet for E-mail</td>
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<td></td>
<td></td>
<td>-.177</td>
<td>-.142</td>
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<td></td>
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<tr>
<td>Using the Internet for Reference</td>
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<td></td>
<td></td>
<td>.129</td>
<td>.167</td>
</tr>
<tr>
<td>Using the Internet for Banking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.139</td>
</tr>
<tr>
<td>Using Chatrooms to Pass Time</td>
<td>.151</td>
<td>.176</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using SMS text-messages for Conversation</td>
<td></td>
<td></td>
<td></td>
<td>.146</td>
<td>-.140</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.177</td>
</tr>
<tr>
<td>Using SMS text-messages for Receiving Formal Information</td>
<td></td>
<td></td>
<td></td>
<td>.149</td>
<td>.132</td>
</tr>
<tr>
<td>Using SMS text-messages just to make contact with people</td>
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<td></td>
</tr>
<tr>
<td>Using SMS text-messages for Passing on jokes messages</td>
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<td>.155</td>
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<td>.153</td>
</tr>
<tr>
<td>Quantity of daily SMS text-messages sent</td>
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<td>-.164</td>
<td>-.178</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>-.197</td>
<td></td>
</tr>
</tbody>
</table>

***All values are Beta coefficients.

Italic indicates Beta coefficients when social support is not included.
However, when social support is included in the analysis using the Internet for banking ceases to indicate a statistically significant interaction with anxiety. This would suggest that social support acts as a third variable in this relationship. Importantly this change is not statistically significant ($p = .706$) indicating that whilst social support has a third-variable influence on this relationship, this influence is not statistically significant.

**Stress**

Stress was measured as the third component of the DASS21 scale. In a stepwise multiple regression social support was entered first and explained 2.6% of the variance in the levels of anxiety reported by the participants ($F_{1.379}, p < .01$). Using the Internet for entertainment was entered second and accounted for a further 2% of the variance ($F_{1.377}, p < .05$). The length of time spent using the Internet for reference was entered third and accounted for 1.4% of the variance ($F_{1.375}, p < .05$). Using SMS text messages just to make contact with people entered into the regression fourth and accounted for 3.1% of the variance ($F_{1.374}, p < .01$).

The levels of social support were again the largest predictor of the psychological-wellbeing measure. The beta coefficient for this relationship is again negative ($beta = -.254, p < .001$), which indicates that having higher levels of social support is associated with reduced the levels of stress experienced by the participants. This is in support of the previous literature regarding social support and psychological well-being (e.g. Argyle, 1992) where this sort of relationship has been frequently reported.
Using the Internet for entertainment was the second predictor of the levels of stress reported by the participants. This relationship was a positive one \((beta = .123, p < .05)\) suggesting that those participants who were using the Internet for entertainment purposes reported higher levels of stress. This would suggest that seeking entertainment on the Internet is harmful to psychological well-being if it is interpreted within the framework of 'harm' (e.g. Kraut et al., 1998). Again there are alternative conceptual frameworks. Stress is associated with cognitive overload and avoidance of further stressful situations (e.g. Newell, 1990). Hence one reason why participants use the Internet for entertainment because the low levels of cognitive demand associated with some forms of Internet use – compared with, say, trying to organise a group of friends for a night out.

The third predictor of the levels of stress was the duration of using the Internet for reference purposes. The beta coefficient for this relationship is a positive one \((beta = .129, p < .05)\), which suggests that increased duration for using the Internet for reference is associated with higher levels of stress. There are several possible explanations for this finding. Since we have no direct knowledge of the causes of stress in this sample, it is possible that using the Internet for reference purposes is simply indicative that some of the variance in stress is the result of coursework and examination revision pressures. Hence, if academic work is the source of stress, then it is not surprising that they seek to relieve stress by seeking reference materials from the Internet.

The fourth predictor of stress was using SMS text messages just to make contact with people. This relationship was a positive one and the beta coefficient \((beta = .182, p < .01)\) suggests that increased
usage of SMS text messages just to make contact is associated with higher levels of stress in the participants. At face value this would seem to suggest that the just contacting people for the sake of it via SMS text messages lacks the supportive functions that reduce levels of stress. Nevertheless, at a time of work stress, for example, one may not have time or opportunity to engage in face-to-face contact or telephone, hence a text message may be a fairly quick substitute.

Importantly, the findings between the two multiple regressions showed the greatest variation for this dependent variable. Indeed, only the duration of time spent accessing the Internet for reference remains a statistically significant predictor of the levels of stress. As Table 10.2 indicates, the beta coefficient for the relationship decreases slightly when social support is included in the analysis but the relationship remains statistically significant. The differences between the beta coefficients were not statistically significant ($p = .564$) supporting the assertion that social support has little influence on the findings for using the Internet for reference. Again social support has been found to be the most important influence on the levels of stress.

Interestingly the duration of use of the Internet for entertainment was not statistically significantly associated with stress when social support was not included in the analysis although the differences between the beta coefficients were not statistically significant ($p = .928$). The same was found for using SMS text messages just to make contact with people ($p = .083$). When social support was included in the analysis these relationships were indicated in the data. This would suggest that social support is having a suppressing influence on the interactions between these variables and the levels
of stress reported by the participants. It is possible that stressed people try to contact others. However, it would also seem that those with good social support do not tend to do this as much as those with poorer social support.

Another interesting comparison is that when social support is included in the analysis, the quantity of SMS text messages sent each day, the use of SMS text messages to pass on joke messages and using SMS text messages for conversation all ceased to have statistically significant interactions with stress. Indeed, the changes in the beta coefficients for each of the variables between the two analyses were not statistically significant. The change for the quantity of SMS text messages sent each day \( (p = .317) \), the use of SMS text messages to pass on joke messages \( (p = .488) \) and using SMS text messages for conversation \( (p = .507) \). This would suggest that social support having a third-variable effect on these relationships although this influence is not statistically significant. That is, these relationships only existed in the initial multiple regression which did not include social support as a variable because social support had not been controlled for statistically. This is interesting because all of these uses are associated with mobile phone uses which suggest that in terms of stress this digital media has little part to play. Indeed, social support would appear again to be the most influential variable on the levels of stress.

**Social Loneliness**

In the current research loneliness was measured using the UCLA Loneliness Scale (Russell et al., 1980). Social loneliness was measured on the first loneliness factor (see Chapter 8). For the stepwise multiple regression, social support entered first and
explained 7.8% of the variance in the social loneliness \((F_{1.376}, p < .001)\). Using the Internet for e-mail was entered second and explained a further 2.9% of the variance \((F_{1.375}, p < .01)\). Accessing the Internet from a library was entered third and this accounted for 2.1% of the variance in the levels of the first loneliness factor \((F_{1.374}, p < .01)\) Using SMS text message to receive formal information was entered fourth and this accounted for 1.5% of the variance \((F_{1.373}, p < .05)\). Finally using SMS text messages for conversation was entered fifth and this explained a further 1.7% of the variance \((F_{1.372}, p < .05)\).

The first predictor of the social loneliness was social support. The beta coefficient for this relationship shows that this is a negative relationship \((\text{beta} = -.309, p < .001)\) therefore suggesting that higher loneliness is associated with lower social support. This again is in accordance with the literature regarding loneliness and social support where the two have been linked in this way (e.g. Ng, 2002).

The second predictor of social loneliness was using the Internet to send and receive e-mails. This relationship was a negative one and the beta coefficient \((\text{beta} = -.177, p < .01)\) indicates that increased usage of the Internet for e-mails is related to decreased levels of loneliness. The nature of e-mail is that it is a communication media which would explain the relationship displayed in the data. The literature on loneliness supports this trend for communication in general.

The third predictor was accessing the Internet from a library. As with the previous measures of psychological-wellbeing, this
relationship is a positive one. The beta coefficient for this interaction ($beta = 0.153, p < .01$) suggests that the more frequently the Internet is accessed from a library, the higher the levels of loneliness reported in the participants. As has been mentioned with regard to previous findings, accessing the Internet from a library seems to have a relationship with psychological-wellbeing.

The fourth predictor was using SMS text messages to receive formal information. The beta coefficient ($beta = 0.149, p < .01$) for this relationship suggests that using SMS text messages to receive formal information is associated with higher levels of loneliness in the participants. This could be due to the formal information not acting in the same way as interaction with friends. Formal information under the definition for the current research could be information regarding paid work (e.g. receiving working hours or requests to work).

The fifth predictor of social loneliness was using SMS text messages for conversation. This relationship was a negative one ($beta = -0.140, p < .05$) which suggests that increased use of SMS text messages for conversation could lead to lower levels of loneliness. The data indicates that this is the case for the participants in the current research. This again is supported by the general literature on loneliness and social interaction. Increased communication is associated with lower levels of psychological distress. The SMS text message when used for conversation is likely to fulfil the role of a limited substitute for face to face conversation. It offers almost instantaneous interactional potential and can be done in private within a room full of people.
When the multiple regression including social support and the multiple regression not including social support are compared (see Table 10.2, p198) the relationships reported are very similar for both. Again there are slight changes in the beta coefficients reported but the direction and strength remain relatively unchanged. Indeed, the changes between the beta coefficients for accessing the Internet from a library did not differ statistically significantly \( (p = .576) \). This was the same for using the Internet for e-mail \( (p = .594) \), using SMS text messages for conversation \( (p = .573) \) and receiving formal information via SMS text messages \( (p = .797) \). As has been reported for the multiple regressions for the previous dependent variables, social support is once again the most influential variable included in the analysis. However, when social support is included in the analysis, the relationship between accessing the Internet from a library and social loneliness becomes statistically significant. This would suggest that social support having a suppressing influence on this relationship. However, as has been reported for the other dependent variables, any suppressing influence that social support has on this relationship is not statistically significant.

**Emotional Loneliness**

Emotional loneliness was measured by the second factor (see Chapter 5) for the UCLA Loneliness scale. In the stepwise multiple regression gender was entered first and it explained 2.3% of the variance in emotional loneliness \( (F_{1.377}, p < .01) \). Social support was entered second and it accounted for 12.7% of the variance \( (F_{1.376}, p < .001) \). Accessing the Internet from a library was entered third and it accounted for 3.6% of the variance \( (F_{1.374}, p = .001) \).
The first predictor of emotional loneliness was gender. The beta coefficient for this relationship ($beta = -.116, p < .05$) indicates that it is negative so the female participants have indicated lower levels of loneliness than the male participants. The gender variable is a nominal variable though as it is binary it was appropriate to use it as a dummy variable, which was coded 1 for male and 2 for female participants hence the negative relationship reported in the multiple regression.

The second predictor was social support. This relationship was a negative one ($beta = -.399, p < .001$), which suggests that higher levels of social support are associated with lower levels of loneliness. This again supports the findings of previous research into loneliness and social support. (It might be noted that this beta weight is quite substantial. Since this is a hierarchical analysis using blocks then the order in which the predictors emerge is not determined by their size.)

The third predictor of emotional loneliness was accessing the Internet from a library. This relationship takes a positive value, which indicates that higher levels of loneliness are associated with more time spent accessing the Internet from a library ($beta = .198, p = .001$). This follows the trends in the data for the other measures of psychological well-being and Internet use in a library. The persistence of this finding should be noted as it makes it more difficult to dismiss it as a chance matter. Suggestions as to the nature of this type of use of the Internet have already been made. Obviously, more detailed evaluations would only be possible with more specific research evidence.

As can be seen from this analysis, emotional loneliness only has associations with very few variables. Again, the same variables
appear with similar beta coefficients in both the analysis including and excluding social support. Neither of the small changes in the beta coefficients for gender ($p = .506$) or for accessing the Internet from a library ($p = .560$) were statistically significant. However, for the analysis when social support is included, once again social support is identified as the most influential variable on emotional loneliness. This would suggest that in terms of emotional loneliness social support has little influence over any other relationships reported in the analysis but has the strongest relationship with social support.

**Summary**

The multiple regressional analyses of the data for the current research have brought up several key themes in the research. The social aspects of the digital communication media (such as e-mail, conversational text messages etc) have generally been associated with higher levels of psychological well-being. On the other hand, the less social and more formal aspects of the use patterns for these media (such as receiving formal information via SMS text messages, banking on the Internet etc) have been associated with lower levels of psychological well-being. It is important to stress that these relationships are not assumed to be causal links. Quite the reverse, it will be argued later that the patterns do not reflect the adverse influence of the digital media on psychological well-being. Instead, patterns of digital media use may best be regarded as means of coping and adjusting to the socio-psychological difficulties manifested by poorer psychological well-being. More generally, the data will be argued to fit the view that digital media of communications are part of a satisfactorily
functioning socio-psychological environment in this group of young people.

The following chapter presents and discusses further statistical analyses of the data from the current research. These examine the influences of digital communications on those participants with 'high' and 'low' psychological well being.
Chapter 11: Binomial Logistic Regressions for the High and Low scorers on Psychological Well-Being

Overview

This chapter presents the findings of binomial regression analyses which aimed to identify the pattern of characteristics which best distinguished young people with the greatest levels of psychological well-being and those had the lowest levels of psychological well-being. Binomial logistic regression has similar objectives to Discriminant Function Analysis. Release 11.1 of SPSS was used for the analysis.

The analysis seeks to optimise the allocation of cases into the two groups based on the available set of predictor variables. Psychological well-being, for these purposes, is regarded as a multi-faceted concept. Consequently the measure of psychological well-being is essentially a composite of two different measures - the UCLA Loneliness Scale (Russell et al., 1980) and the DASS21: Depression Anxiety and Stress Scale (Lovibond & Lovibond, 1995).

The Structure of the Bi-Nomial Logistic Regression

In order to synthesise the findings of the previous chapter more, it was decided to combine the measures of psychological well-being to identify two groups - high and low psychological well-being. This allows for comparison between these two poles. For this analysis each of the psychological well-being measures (Loneliness, Anxiety, Depression, Stress and Social Support) were separately converted into z-scores. This conversion allowed the summing of the variables into a composite z-score which will be referred to as psychological well-being. Approximately the highest quarter of scorers and the
lowest quarter of scorers on psychological well-being were identified.

The high and low groups were coded into a dummy variable for the purpose of this analysis. This dummy coding was 1 for the high levels of psychological well-being and 2 for the lowest levels of psychological well-being. This was to create the dichotomous dependent variable that is required for binomial logistic regressions. By manipulating the data in this way and taking extreme groups of scorers, it was hoped that distinguishing features would be more readily identified.

Binomial logistic regression may use any combination of categorical variables and score measures for the independent (predictor) variables. The same blocks of variables were entered into the binomial logistic regression analyses as were for the multiple regressions described in the previous chapter. Once this had been done the bi-nomial logistic regression could be performed. The independent variables were entered in the same blocked order as outlined in the previous chapter for the multiple regressions. Forward conditional binomial logistic regression was employed. The criterion for entry was .05 and for removal was .10.

### The Predictive Accuracy of the Logistic Regression

As Table 11.1 illustrates the accuracy of the classification based on the optimum selection of predictors is not consistent. The analysis was substantially more accurate for the high psychological well-being group and the low psychological well-being group. For the participants who have indicated the highest levels of general psychological well-being the predictive power is strong with an 83.1% accuracy. This indicates that the variables have a good
accuracy for classifying participants into the high psychological well-being group.

### Table 11.1: The Step 7 Classification Table for High and Low Psychological Well-Being

<table>
<thead>
<tr>
<th></th>
<th>Best prediction: Psychological well-being</th>
<th>Best prediction: Psychological well-being</th>
<th>% Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>High psychological well-being</td>
<td>98</td>
<td>20</td>
<td>83.1%</td>
</tr>
<tr>
<td>Low psychological well-being</td>
<td>42</td>
<td>31</td>
<td>42.5%</td>
</tr>
<tr>
<td>Overall accuracy =</td>
<td></td>
<td></td>
<td>67.5%</td>
</tr>
</tbody>
</table>

However, for the participants in the low psychological well-being the classification power of the predictors was relatively weak (accuracy = 42.5%). This suggests that the variables do not have a high accuracy for predicting low levels of psychological well-being. In fact, the analysis misclassifies those with low psychological well-being more often than it correctly classifies them. The misclassification rate for the high psychological well-being group is low. This means that our set of predictors is not complete — there are other factors responsible for low psychological well-being other than those included in the analysis.

The overall predictive accuracy of the binomial logistic regression is moderate at 67.5%. So, in general, the variables entered into the bi-nominal logistic regression do not distinguish between the participants with high and low general psychological well-being with a high level of accuracy though, as we have seen, the misclassification is poor for low psychological well-being but good for high psychological well-being.
So the variables included in the current research do not accurately predict the lower levels of general psychological well-being. What variables would need including to improve the classification is, of course, not possible to know without further research. There is no reason to believe that these 'missing variables' are related to the digital communication media. Given the range of variables measuring digital communication media functions and use included in the present analysis, it is perhaps more likely that additional digital communication variables would do little to improve the accuracy of the classification. To the extent that digital communications media use was effectively sampled, the more likely that different types of variable should be sought.

So the current findings suggest that digital communication media use does not have a strong predictive association with low levels of general psychological well-being. As Table 11.1 indicates, the digital communication variables that were included in the analysis do seem to have a stronger predictive association with the high levels of psychological well-being. This would appear to contradict the assertions made in previous research (e.g. Kraut et al., 1998) where the use of these digital communications was associated with decreased levels of psychological well-being. As we are about to see, the evidence, on the contrary, seems to associate psychological well-being with digital communications media use.

**The Predictive Independent Variables**

Despite the apparent weakness of the predictive accuracy of the model, the binomial logistic regression indicated that there were five statistically significant predictors which distinguished between
the participants with high and low levels of psychological well-being. Table 11.2 is a summary table for the final regression model in the analysis.

Table 11.2: A Summary Table for the Final Regression Model

<table>
<thead>
<tr>
<th>Step 1</th>
<th>B</th>
<th>Standard Error</th>
<th>Wald</th>
<th>Degrees of freedom</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rawlins Community College</td>
<td>1.378</td>
<td>.364</td>
<td>14.328</td>
<td>1</td>
<td>.000</td>
</tr>
<tr>
<td>Social Support total</td>
<td>-.161</td>
<td>.060</td>
<td>7.283</td>
<td>1</td>
<td>.007</td>
</tr>
<tr>
<td>Using the Internet for entertainment</td>
<td>.381</td>
<td>.191</td>
<td>3.965</td>
<td>1</td>
<td>.046</td>
</tr>
<tr>
<td>Accessing the Internet from a library</td>
<td>.354</td>
<td>.171</td>
<td>4.310</td>
<td>1</td>
<td>.038</td>
</tr>
<tr>
<td>Using SMS text messages to pass on joke texts</td>
<td>.318</td>
<td>.157</td>
<td>4.108</td>
<td>1</td>
<td>.043</td>
</tr>
</tbody>
</table>

The final model indicates that attending Rawlins Community College was the strongest predictor of having low levels of psychological well-being ($B = 1.378$, $df = 1$, $p < .001$). None of the other dummy variables for the colleges and schools appears in the list of predictors. Of course, there is no reason to assume that the college attended caused the levels of psychological well-being. The association may be due to a number of factors beyond the bounds of this dissertation. One strong possibility is the proximity of the data collection phase at Rawlins to December and the end of the college term when the research was carried may have had an influence of the reported levels of general psychological well-being. Towards the end of term it is likely that deadlines for work are approaching. Whilst coursework does not have the same constraints on time and location that formal examinations do it is likely that
approaching deadlines are still influential on the general levels of psychological well-being. Indeed, the stress of examinations has been documented (e.g. Torsheim & Wold, 2001) as has general stress characteristics in college students (e.g. Weinstein, 2002).

High levels of social support were found to be predictively associated with higher levels of psychological well-being \( (B = -0.161, df = 1, p < 0.01) \). This finding supports the findings from the earlier stepwise multiple regressions and also the literature on social support (e.g. Torsheim & Wold, 2001; Weinstein, 2002).

Using the Internet for entertainment purposes was found to be associated with the participants who reported lower psychological well-being \( (B = 0.381, df = 1, p < 0.05) \). This supports the previous findings (see Chapter 10) from the multiple regressions for the individual psychological well-being components. Again, it would be risky and unwarranted to suggest that using the digital media for entertainment purposes itself lowers psychological well-being. The nature of the intervening variables between using the internet for entertainment purposes and lower psychological well-being is as difficult to assess as the direction of the relationship. It may, of course, be a very simple relationship — the lonely, isolated individual may have much more free time to use the internet for these purposes compared to their better socially integrated peers.

Accessing the Internet from a library was found to be associated with the participants who reported lower levels of psychological well-being \( (B = 0.354, df = 1, p < 0.038) \). The solitary nature of the library, where conversation is not welcomed rather than the actual use of the Internet, may be a crucial factor. Indeed, accessing the Internet from a library could be no more different than using a book
for reference in a library or just reading which is a central part of all academic research.

Using SMS text messages to pass on joke messages was associated with the participants who indicated lower levels of psychological well-being ($B = .318, df = 1, p < .043$). This suggests that this type of use for mobile communications is associated with lower psychological well-being. This would seem to contradict the social function that would be associated with a communication media. It is important to take into account the fact that the passing on of previously written SMS text messages requires little involvement for the person beyond selecting the phone number of the recipient. No extra input is required so it is possible that this decreased social involvement is a contributory factor.

**Summary**

The findings from the bi-nomial logistic regression has identified several statistically significant predictor variables which distinguish between those participants with high and low levels of psychological well-being. Interestingly despite the analysis indicating that the predictive accuracy was quite good for those with high psychological well-being, only one of the predictor variables was associated with this. Higher levels of social support were associated with those participants who displayed higher psychological well-being. The other predictors (Being at Rawlins Community College, Accessing the Internet from a library, Using the Internet for entertainment & Passing on joke SMS text messages) were all associated with those who reported lower levels of psychological well being.

Conversely the low levels of psychological well-being had a very low predictive accuracy in the regression. Despite this, four of the
predictor variables distinguished those who had low levels of psychological well-being. This low predictive accuracy means that there are other variables beyond the digital media which are better predictors of low psychological well-being. Overall none of the predictors for either category can be considered to have a high predictive accuracy.

Those variables which were identified as having a predictive relationship were generally consistent with the previous stepwise multiple regressions reported in Chapter 10 The interactions between these variables and the dependent variable were also consistent with the ones reported in the previous chapter. The lack of any causal links is an important point to stress in this research. Also the influences of variables that are not part of the research suggests that the use of digital media is not a primary factor in the levels of psychological well-being in the participants for this research.

The best predictor was attendance at Rawlins Community College. This perhaps indicates that variables beyond those included in the survey questionnaire are more influential than any of the digital communications media variables.

The following chapter presents a detailed discussion of the findings for the current research both in relation to the existing social psychological research and with regards to the need for future research.
Chapter 12: Discussion/Conclusion

Overview

This chapter reviews the main findings of the research and attempts to synthesise the findings in order to provide an account of their meaning and relevance. The findings are related to other literature on the topic and are used to present ideas and direction concerning the future of research in this field.

The key findings

Psychological well-being

Central to this thesis was the view that communications research, especially that from a psychological and social psychological perspective, has been dominated by the core belief that the media are harmful to users and especially so to vulnerable groups. In contrast, underlying the work completed specifically for the present thesis is the idea that rather than being problems, the media are not only a positive contribution to society but that they are integrated into all aspects of society. Of course, such a broad view can only partly be evaluated within the scope of one study.

Nevertheless, it seems that the present study at least partially supports this view and is extremely difficult to reconcile with the view of adverse media effects. This is important as this is one of only a view studies into the role of the digital media of mass communications. Of course, there are proponents the view that the digital media have adverse consequences. In particular, the suggestion that the use of digital media may be detrimental to the
psychological well-being of young people (e.g. Kraut et al., 1998). Indeed, it was Professor Kraut's work which formed part of the stimulation for this thesis. As discussed in Chapter 3, there seemed to be severe limitations to the usefulness and applicability of Professor Kraut's work which seemed largely incompatible with one's day-to-day experience as a young person in the digital communications environment. This is clearly not a sufficiently academic justification for new research but is the basis for one's personal interest. Academically, the motivation was a broader dissatisfaction with the focus and emphasis of much mass communications research which then transmogrified into an academic questioning of the case that Professor Kraut especially put forward.

The fundamental research aim for this thesis was to examine the relationships, if any, between various uses of digital media and psychological well-being. Crucially the thesis was articulated in terms of the concept of well-being. This concept is indicative of the desire to extend the research on digital communications into their positive functioning within society. Operationally, of course, it proved to be somewhat difficult to define the broad concept of psychological-wellbeing without measuring the absence of adverse psychological characteristics such as loneliness and depression. One can regard this as a flaw but, in defence of this. It has to be said that psychology in general tends to define concepts like normality in terms of the absence of abnormality. Conceptions of positive mental health have only rarely been touched upon. As a consequence in this thesis the (lack of) psychological well-being is indicated by a number of different components - depression, anxiety, stress and loneliness. Doubtless, psychological well-being when and if ever sufficiently researched will prove to be a multidimensional concept. One could suggest that a fuller definition of psychological well-being
would include (the absence of) depression, loneliness, poor self-esteem and the like. Because of the constraints of research then the decision to use (absence of) depression, anxiety, stress and loneliness is defensible but less than complete given the exploratory nature of the study.

There is one other consideration which needs to be noted. That is the way in which social support has been conceived in the research. In many ways, the concept of social support begs comparison with the concept of psychological well-being. It clearly not identical with it since one is a social matter and the other is a psychological one. But from the review in Chapter 4 of the concept of social support, it is clear that it is a strong predictor of absence of negative psychological characteristics such as depression and loneliness. Despite this, one could regard the presence of good levels of social support as being an indicator of psychological well-being just as much as say depression may be regarded as an indicator of absence of social well-being. So this begs the question of how social support should be regarded in any account of the relationship between digital communications use and psychological well-being.

We have chosen to regard social support, for the purposes of this research, as an intervening variable which, in some way, may mediate the relationship between digital media use and psychological well-being. This is clearly not the only way in which this could be regarded. Nevertheless, the literature on social support tends to treat social support as a variable mediating between negative influences and psychological outcomes. The higher the level of social support, in general, the less likely negative influences will take a psychological toll. This is the model that basically underlies how social support has been conceived in this thesis. It is difficult to incorporate such a clearly social concept as
social support directly with psychological concepts such as anxiety and depression. They of course interrelate but they are variables of very different orders. Of course, in practice, by regarding social support as an intervening variable it is not being ignored but incorporated into a simple model linking digital communications use with psychological outcomes. Following this model, the role of social support is still part of the statistical analysis, but it is not being lumped together with a distinctive set of psychological variables.

Participant time constraints necessitated the use of relatively short measures which, in turn, meant that the best possible but brief measures of psychological well-being needed to be employed. In the end, two separate measuring instruments were used to investigate these levels. The use of the DASS21 measure (Lovibond & Lovibond, 1995) was favoured since it provided brief but sound measures of the participant’s levels of depression, anxiety and stress. The Revised UCLA Loneliness Scale (Russell et al., 1980) was also employed. This is a well-established instrument used to measure levels of loneliness – most typically of two different types. Both measuring instruments are self-report measures consisting of 21 and 20 items respectively. Each measure can be and was taken individually and investigated as a distinct psychological state but there is a strong case for combining them to give an overall assessment and index of each participant’s level of general psychological well-being. The main findings will be discussed first in terms of the general psychological well-being and then in terms of the individual components measured in this research.
General Psychological well-being:

Psychological well-being can be combined in order to provide an analysis of general psychological well-being. This gives the more global or overall picture. In many ways this global picture is something new in the present thesis as mostly the separate components have been treated separately in studies employing them even where more than one has been included in a particular study. By regarding psychological well-being in this way one is both indicating that the concept is multifaceted but perhaps also indicating that there is no single set of defining features of psychological well-being.

In order to gain this broad perspective on the data, it was decided to explore the characteristics of those high on psychological well-being with those low on psychological well-being. The broad perspective forces the analysis to concentrate on the broader picture. The narrower picture is somewhat confused simply because by the detail of weak and not always consistent relationships. A binomial logistic regression was used to investigate the predictors for the participants who displayed high levels of general psychological well-being and for those who displayed low levels of psychological well-being. The advantage of this form of analysis over, say, multiple regression is that dummy variables and other nominal variables are treated statistically more appropriately. However, either form of analysis may be justified. The main findings were:

1: Rather than any of the key predictor variables such as Internet use, lower levels of general psychological well-being were associated with attendance at the Rawlins Community College
students. One would hesitate from assuming that the characteristics of the college were in some way the determinant of these lower levels of psychological well-being. The current research has not sought to suggest causality in any findings that have arisen from the analyses and it is possible, if not likely, that external influences beyond the scope of the research have contributed to this finding.

There is strong possibility that the association between the Rawlins Community College and lower psychological well-being could be explained by the proximity to the end of term and possible deadlines for coursework. This period is likely to be inherently associated with increased levels of stress because of the deadlines and importance of the work. Research, such as that of Torsheim and Wold (2001) has identified elevated levels of stress and anxiety associated with exams in college students. It is therefore probable that this characteristic could also be associated with coursework. It has also been identified that college students are a population which are associated with elevated levels of general stress (e.g. Weinstein, 2002).

The research period at Rawlins was towards the end of the final month of the autumn/winter term. This is likely to coincide with deadlines for coursework and a generally busy period in the college year. So it is possible to argue that the finding about Rawlins College is simply an artefact of the time of the year when this aspect of the data collection took place. The possibility of this influence was taken into consideration during the data collection phase but it was decided that there was a sufficient time gap for any potential influence to be minimal. This assumption may be have been wrong. Only the Rawlins Community College variable and none of the other colleges showed this or any association with psychological well-being. This is despite the fact that recruitment of
participants from Dallam 6th Form was conducted in the same month as from Rawlins Community College. However, the sample taken from Dallam was much smaller (due to the size of the college) and the data was also collected at the beginning of November whereas the data from Rawlins was collected near the end of the month. As will be discussed in detail further into this chapter, when the individual components of psychological well-being are investigated separately none of the institutions have a statistically significant predictive relationship with these variables. If it is true that the proximity to work deadlines is responsible for the association, it also suggests that transient factors such as this may be more influential than long term influences including any influence of the digital communications media.

2: The second most powerful predictor of psychological well-being was social support. Higher levels of social support were associated with higher levels of psychological well-being. Regularly, frequently and consistently has research shown that good levels of social support can seem to protect people against negative states such as depression (e.g. Stice et al., 2004), loneliness (e.g. Ng, 2001). This finding was not an unanticipated one and reaffirms the apparent role that social support has in maintaining higher levels of psychological well-being. Most importantly once again, this finding suggests that social support is a more important influence on psychological well-being than any of the variables associated with digital media use. There is one important possible consequence of this. Research by Weiser (2001) supports the notion that one influence of the Internet is by extending the range of possible sources of social support. So extended social networks through the Internet may effectively increase social support. One could also suggest that this may even immunise Internet users against any negative influences of the Internet on psychological well-being. Of
course, there is a lot of conjecture in this but this is appropriate with the social psychological study of the Internet being in its infancy.

3: However, using the Internet for entertainment purposes was the third predictor of the levels of psychological well-being. Lower levels of psychological well-being are found in those using the Internet for entertainment. Since there are a number of explanations for such a relationship, it is inappropriate to conclude that the use of the Internet for entertainment causes poorer psychological well-being. The major alternative to this is that young people with a poorer level of psychological well-being are driven to use the Internet as a means of entertainment because of their problems.

It is necessary to go beyond the data to seek possible explanations for this. Using the Internet for entertainment does not require much involvement or input from the user. The same has often been said of other media of entertainment such television viewing. Young people who, say, are depressed and lonely might be inclined to use the Internet in this somewhat passive way rather than utilise psychological resources more actively passing their time. In this way this form of use of the Internet is essentially a substitute for other activities and not an effect or direct influence of the Internet on psychological well-being. Furthermore, it should be stressed that the term ‘entertainment’ is a rather broad one covering a variety of uses. Because of the constraints of the study, it was not possible to subdivide this heading further because this would have made the questionnaire too long. Nevertheless, this finding about the entertainment functions of the Internet clearly warrants further and detailed investigation. It would be important to ascertain what elements (possibly all) of using the Internet for entertainment are associated with lower levels of psychological well-being.
Poorer psychological well-being was associated with a fourth factor. Those young people who accessed the Internet from a library tended to have poorer levels of psychological well-being. Thus in this case, it is not the type of Internet use which is associated with poorer psychological well-being but a specific location of use. This actually is a very consistent finding from this research and, for example, applies to each of the separate components of psychological well-being. So it is not possible to dismiss it as a chance finding or an inconsistent one either. The question is why this location should be used by those with poorer levels of psychological well-being. Put the other way around, why do happy and sociable young people more rarely go to a library to use the Internet?

We cannot be certain what sorts of use the students using the library are putting the Internet to. One guess, of course, since the library is a college location that they were using the Internet for work orientated reasons are likely. There are two obvious possible explanations of the findings:

- The nature of a library may be influential in creating the relationship. Libraries by design are not meant to be social places because of the rules such as quietness and the general layout. Whilst many will have areas for group study they are still subject to the same rules and conditions. It is likely that accessing the Internet from a library is a solitary affair again because of the nature of the building. That is to say, it is an environment for the less sociable or isolated student.
- Education researchers have shown that students may have very different experiences of school. Some have their primary allegiance to the educational aspects of the school as an institution, others
have their primary allegiance to the social aspects of a school as an institution. They have different values, beliefs, and needs. Sometimes this has been referred to as distinct subcultures. Howitt and Dembo (1974), refer to this distinction as that between school culture orientation and street culture orientation. This is relevant here because the street culture orientation concerns youngsters with more friends and social activities. So it may be that the students who use the library more for Internet purposes are much like the school orientated sub-culture. So their time at college is spent more actively pursuing educational purposes and less actively pursuing social contacts and relationships. Those who do not go to the library to use the Internet frequently may well be spending their time at college with their friends, on social activity, chasing members of the opposite sex and so forth.

This again is something which could only be evaluated fully by a more focused study than the present one which, of necessity, was exploratory and widely conceived.

Kraut et al. (1998) argued that even within the home the use of the Internet resulted in a decrease in communication between the family members. It is possible that the reasons why this may be the case are related to the present findings. In other words, the Internet may actually be replacing family communication because it provides an extension of the learning environment from schools to the home. The Internet displaces family communication because it provides a range of alternative activities. These may be educational, but equally they may be sociable. It is important to consider the findings of the present research and other research into the Internet more than simply through the (negative) effects paradigm of the role of the media in society described in Chapter 2. By regarding media use as being more integrated into the social psychological
environment of the Individual, it begins to be possible to understand the findings as part of the total picture of an individual’s life.

Importantly, in a follow up study conducted by Kraut et al. (2002) using 208 of the original first stage participants, the negative effects which the authors had identified in the earlier article (Kraut et al., 1998) could not be found in the sample. This further questions the validity of the claims made in the original article and subsequent articles (e.g. Kiesler & Kraut, 1999). Indeed, even the most pessimistic view of the influence on the Internet on psychological well being could only claim that any effects were temporary. However, it is more likely that the weak relationships which were found in the original study had litle to do with the use of digital communication media. It may even suggest that there is little influence from digital media use either way.

Interestingly, in the same paper Kraut et al. (2002) reported on another longitudinal study which took place between 1998 and 1999 involving 406 new computer and television purchasers. The research showed that the sample generally experienced positive influences from using the Internet. These positive influences were found for communication, social involvement, and psychological well being. However, using the Internet predicted better outcomes for extraverts in the sample and those with more social support whereas as it predicted worse outcomes for introverts and those indicating lower support. This would appear to suggest that other characteristics are important in the negative influences reported in this study.
Overall, the findings of this aspect of the current research give little indication that the digital media have any convincing negative influences on the participants. It would also be inappropriate to suggest this link considering that none of the other locations, including the home, were predictors of any of the measures of psychological well-being. Whatever the explanation, a simple model of the negative effects of the Internet on users cannot be reconciled with this pattern of findings.

4. The final predictor of high and low psychological well-being in the binomial logistic regression was using SMS text messaging via the Internet for passing joke messages. Greater use of the SMS text message function on mobile phones for this purpose was associated with low levels of psychological well-being. Interestingly, once general psychological well-being is broken down into its separate components this variable is only a predictor for the levels of anxiety reported by the participants. It is possible that this association is linked to the fact that passing on messages of this sort does not require much input or involvement from the person sending it. It is impersonal in terms of the content.

The current research did investigate what happens next in the chain of events though this next step might be important in explaining the current finding. It is possible that sending such a message may elicit a reply from the recipient therefore initiating contact and interaction via messages. Conversely, for most types of text message, the recipient is expected to reply. Not to do so may be regarded as a rejection of the sender. If a reply is sent, it could have negative aspects such as saying no to a proposed get-together. In other words, sending most sorts of SMS text message via the Internet is a risky action in that the outcome may be negative such as some sort of rejection. Sending a joke through a
text-message does not run the same emotional risk. A joke received is a little like a seaside postcard – no reply is expected hence no risk of a negative response. Further study is required into the association between this use for SMS messaging and psychological well-being. However, the idea that joke SMS text messages may be used by those feeling isolated and depressed as a form of communication which is communication but with little psychological risk of further social rejection might be an important idea guiding research into the detail of text messaging.

When all of these findings are taken together, social support seems to be as more important to and a stronger predictor of the levels of psychological well-being than any of the 112 variables entered into the binomial logistic regression. Importantly, only three variables out of all of the 112 variables associated with the use digital media had any sort of predictive relationship with the levels of general psychological well-being. This does not appear to support the claims that have been made (notably by Kraut et al., 1998.) concerning the negative impact of the consumption of digital media. Whilst a number of questions have been raised by this research about the Internet which may give direction for future research, the idea that the Internet represents a clear and present threat to the psychological and social psychological health of young people has not been substantiated.

One of the important aspects of binomial regression is its ability to assess how well the predictor variables classify members of the two groups – in this case high and low psychological well-being. It is noteworthy that the predictive strength of the predictor variables (Internet variables etc.) was substantially more accurate for the high psychological well-being group than the low psychological well-being group. That is, exactly the same set of predictors was much
more accurate for classifying those with high psychological well-being correctly. They were relatively poor at classifying those with low psychological well-being correctly. For the participants who indicated the highest levels of general psychological well-being the predictive accuracy of the statistic was 83.1%. However, for the participants in the low psychological well-being the classification power of the predictors was only 42.5% which is relatively weak. This suggests that the variables do not have a high accuracy for predicting low levels of psychological well-being. Overall the accuracy was 67.5% which shows that generally the variables entered into the binomial logistic regression predicted the psychological well-being category only moderately well. So misclassification is low for the high psychological group but not for the low psychological well-being group.

This means that all of the Internet and other variables taken together do not powerfully distinguish between those with higher and those with lower psychological well-being. That is to say, a great deal of the variation in psychological well-being is determined by factors not included in the present analysis. Which put another way, means that the use of the Internet is, at best, only a minor consideration in relation to psychological well-being. This suggests that the duration and types use for the digital communication media has very little influence, either positive or negative on the college based sample. Out of a total of 65 digital media related variables entered into the analysis only 3 displayed any predictive relationship with psychological well-being. These relationships were weak and only just attained the 5% confidence level required for statistical significance.

Out of a total of 112 variables (including the digital media ones) only 5 had any predictive relationship with psychological well-being.
The strongest relationships were between non-media related variables and psychological well-being. Of course, given the nature of regression statistics, it is possible that predictors which are correlates of the significant predictors are not highlighted. Nevertheless, even if this is the case, it is the variance that the significant predictor and ‘hidden’ predictors have in common which causes this and so is of no importance to the analysis. This is true of all forms of regression.

**Conclusions**

It has to be acknowledged that three digital media variables showed a negative predictive relationship with psychological well-being. These three elements of digital media use have very little social involvement and it is impossible to convincingly argue that these they are responsible for the lowering levels of psychological well-being. More so, the vast majority of the variables showed no relationship to the levels of psychological well-being. This would appear to undermine the suggestions that these digital media are ‘harmful’ to the consumers of them. Furthermore, it would also appear to not to support claims about the possible positive influences that these communication media can have on psychological well-being. It would tentatively appear from the current research that the use of these digital communication media has very little direct influence on high and low psychological well-being.

**Individual components of psychological well-being**

**Depression:** In many ways it is difficult to make even theoretical links between Internet use and depression other than to suggest that the Internet may be a resource which is relatively untaxing for
a depressed individual. That is, it does nothing that risk adding to the depressed persons problems whereas, say, some forms of social interaction. The perceived level of social support that the participants received was found to be the largest predictor of the levels of depression reported by the participants. This finding is consistent with the previous literature into social support and its functional components including the relationship between depression and social support (e.g. Henderson, 1992; Stice et al., 2004). Furthermore, the current research has found that higher levels of social support as indicated on the questionnaire were associated with lower levels of depression in the participants. Conceptually one may regard social support as a protective factor preventing which helps deal with factors leading to depression. A network of friends and family is capable of helping individuals deal with problems in many ways which otherwise would lead to depression. Once again this is in accord with previous literature into social support demonstrating this inverse relationship between depression and social support.

Once again, it appears to be the case that social support is a better correlate of psychological well-being than digital media variables. Nevertheless, spending more time accessing the Internet from a library was associated with higher levels of depression. As was discussed for the binomial regression, definitive answers as to what factors create this relationship are not available. The suggestions made earlier amount to the best explanation we have.

The use of the Internet for passing time was also associated with higher levels of depression in the participants. This finding would appear to support claims made by research such as Kraut et al. (1998), which suggested that the use of the Internet was associated with increased levels of depression. This might be a convenient
explanation for researchers advocating that digital media are harmful. However, such claims need to be put into context. Doing any activity just to pass time is something that is usually done because of a lack of other available forms of stimulation and could be associated with boredom. It is also possible that it could be symptomatic of a generally lower social involvement and contact. There is certainly insufficient evidence to suggest that using the Internet in this way stimulates higher levels of depression. It is possible that it is the act of passing time which has the association with higher levels of depression rather than any particular means employed for passing time.

These findings would appear to suggest that for the levels of depression reported by the participants, the use of digital media had very little influence. This finding is does not support the work of Morgan and Cotton (2003) who found that increased use of the Internet for e-mail and chatrooms/instant messaging (e.g. MSN messenger) was associated with a decrease in depressive symptoms as measured by the CES-D scale. However, increased use of the Internet for shopping, playing games or research were associated with increased levels of depression. The relationship between social support and depression has been well researched and the current findings support this body of research.

Anxiety: Once again the levels of social support were found to be the largest predictor of the levels of anxiety reported by the participants. Higher levels of social support were associated with lower levels of anxiety reported on the questionnaire. This trend in the data again supports the previous literature on social support and its interactions with levels of anxiety (e.g. Wei & Sha, 2003). This finding again suggests that it is a non media-related variable
which is the largest predictor of a component of psychological well-being.

There is little to add to this but, as has been discussed previously, accessing the Internet from a library is associated with lower psychological well-being. This finding is consistent with the findings for general psychological well-being and suggests that library context is an exceptional location compared to the other locations included in the research (e.g. home, Internet cafes, mobile phone etc). None of these have shown any power to predict levels of psychological well-being. The possible explanations for the apparent influence that the library has as a location for accessing the Internet have been discussed earlier in this chapter.

The use of the Internet for entertainment is associated with higher levels of anxiety in the participants. This is a similar finding to the binomial logistic regression conducted using the general psychological well-being variable. It is possible that this type of Internet use is similar in nature to using the digital media to pass time. Seeking entertainment may be for a number of purposes hence it difficult to identify the aspects of this sort of Internet which are associated with the higher levels of anxiety. For example, it may be that those with higher levels of anxiety are in greater need to surf the Internet for long periods of time because they cannot relax or settle down to a more relaxed activity such as playing music or watching television. It is possible also that using the Internet for entertainment is initially driven by their anxiety but the Internet reinforces this anxiety. It is possible that the increased levels of anxiety are a contributing factor to using the Internet in this way rather than the Internet contributing to the higher levels of anxiety. Unfortunately, we know too little about the type of content and usage associated with entertainment — for example, is this
entertainment playing computer games on the Internet or is it surfing the Internet or what? This variable in the research does not identify what specific entertainment use the participants actually refer to when responding to this item on the questionnaire.

Possibly using the Internet for entertainment purposes is not a social or communicational exercise and as such since it involves little social contact or interaction. As has been suggested previously for some of the other Internet variables, the potentially solitary nature of this activity may be a contributing factor to the apparent relationship with increased levels of anxiety. However, it has to be acknowledged that reading a book is a solitary activity and during the actual reading period it is certainly non-communicational and yet this activity is not commonly thought of as resulting in with reduced psychological well-being. Quite the reverse, reading is regarded as an enriching and rewarding experience which is to be encouraged.

Further refinement of the types of experience collected together in under the term ‘entertainment’ is clearly necessary. But this level of detail simply was not practicable under the design and time constraints of the present study. Elucidating more ‘refined’ categories might be better carried out using very different types of research design. For example, by specific comparisons using say focus groups involving those who use the Internet for entertainment a great deal and groups who do not. In this way, differences in detailed patterns of usage may occur. The current research has included a number of uses for the Internet which could be included under the heading of ‘entertainment’ (e.g. shopping and chatrooms), and yet none of these have shown a predictive relationship with the levels of general psychological well-being or with the individual components included in this research. It is
possible that types of use for the Internet which have not been included in the current research (e.g. pornography), may be contributory factors. Having more detail might generate clearer and better-founded conceptualisations.

As was reported for the binomial logistic regression, using the SMS message service on a mobile phone is associated with increased levels of anxiety. As previously discussed, possibly the low levels of personal involvement and a relative lack of risk of psychological rejection involved in the process of passing a joke message on may be a possible explanation for this finding. It might be the case that people with higher levels of anxiety use mobile phones for jokes because it reflects their anxiety but does not cause it. So it might be just another thing to do by people who cannot settle.

The main and obvious function of SMS text messages is their ability to communicate via short messages directly between mobile phones or between a PC and a mobile. Increased social contact in most cases should bolster social support and consequently reduce negative impacts on psychological well-being. The greater the number of these SMS text messages that the participants sent each day was associated with decreased levels of anxiety in the participants. This would support the notion that this digital media is facilitating communications and that these communications are involved in anxiety reduction.

Certainly there is clear evidence that mobile telephones and SMS functions are being used by young adults. Charlton et al. (2002) investigated mobile phone ownership among a sample of 351 primary school pupils aged between 10 and 11. A 26-item questionnaire was given to the pupils. The research found that nearly 50% of the male and female pupils owned mobiles. Only
19% had paid for the mobile themselves although almost 50% paid for their own top-up cards. Interestingly, 45% of the sample indicated that they spent between £5 and £10 monthly on call charges with calls to their parents being the primary call use. Perhaps more importantly 38% reported they had used their mobile when confronted by a crisis which raises interesting questions about mobile phones and the availability of social support.

SMS use was another feature that was used by the children and 1 in 5 of the children could send texts via the Internet. This suggests that this digital communication media has been embraced by a young people and plays a part in their social communications. Indeed, rather than expressing concerns about the use of mobile phones, the authors suggest that there may be a negative influence on those who do not use a mobile phone. This negative influence could come in the form of social exclusion for those who do not have a mobile phone (Charlton et al., 2002). Some of these trends are reflected in the current findings.

Increased contact by using the mobile phone is likely to serve to facilitate the reduction of anxiety through the availability of contact and support. It is not only very easy to contact a friend or other source about problems this way but they are often available on a continuous basis throughout the day. Indeed, 75.4% of the sample indicated that their mobile phone was permanently switched on. In a college population, SMS messages may offer instant feedback from friends about work matters, social arrangements etc. As a consequence, users are part of a continuous communication network, perhaps centred around college life, which may increase their sense of community and bolster their sense of psychological well-being as a consequence.
It is important to note that anxiety is the only component of psychological well-being measured in this research which displays a relationship with the number of SMS messages sent per day. It is possible that this finding is influenced by the nature of the communication and the communications device. SMS messages offer a more instant means of communication than even e-mail. Barring delays with the telephone network or a phone being turned off the desired recipient should receive the message instantly. This might be a contributing factor in the current finding. This instantaneous contact might serve to reduce anxiety through the immediate availability of information and response from others. This is especially likely in an educational setting because of the potential for work queries to be resolved quickly and easily. At the same time, the use of text-messaging by those in an anxious state may sometimes be the consequence of school and other matters creating the state of anxiety. One way of reducing some anxieties is simply to solicit the help and advice of others.

Importantly though, the current research did not include a measure of the amount of SMS messages received by the participants. Clarification of this might help clarify the meaning of the relationship found with psychological well-being. If a person sends and receives several messages a day they are likely to display lower levels of anxiety than a person who receives few text messages. Indeed, someone who sends many messages to people but gets very few replies is potentially more likely to display higher levels of anxiety because of this lack of response to their attempts to instigate contact.

Nevertheless, overall, these findings offer little of substance to support any concerns outlined with regard to SMS messaging and socialisation (e.g. Joinson, 2003) that the use of digital media has a
negative influence on a consumer's psychological well-being. Indeed, the findings suggest the exact opposite in terms of the quantity of SMS messages sent per day. This has been positively associated with lower levels of anxiety. As has been found for depression and for general psychological well-being, very few variables included in the current research had a predictive relationship with anxiety. Only 5 variables had a predictive relationship with anxiety and only 4 of those were related to digital media. Of these, 3 showed slight negative relationships with the levels of anxiety but none could be identified as being a direct consequence of digital media use.

Once again it would appear that the levels of social support are more important than anything to do with digital media usage in predicting the levels of anxiety in the participants. Indeed, a very small number of all the digital media variables entered into the analysis displayed any relationship with anxiety. This suggests that digital media use has little impact on those who consume them.

**Stress:** One of the potential implications of digital media usage is the impact on stress amongst those who use it. The basis for this assumption has not been spelt out yet theoretically and in some ways the idea is reminiscent of the view that the modernisation of society brings stress. Digital communications media are clearly part of the modernisation process. It has been suggested that increased levels of stress are associated with uncertainty in social interactions. This finding could be influenced by uncertainty due to reduce cues in interactions online (Sproull & Kiesler, 1991). This is often associated with interactions via the text-based systems such as Internet relay chat or message boards. However, these interactions do not just refer to communicational uses and can include elements such as the experience of shopping online and other such uses.
Uncertainty in interactions has been associated with both stress and anxiety responses in people (Cohen & Wills, 1985). With the lack of face-to-face contact in these interactions it is possible that uncertainty may lead to reduced psychological well-being. One difficulty with this is that this sort of anxiety might be expected to be transitory and the consequence of specific on-line experiences. The anxiety measured in this thesis is assumed to be longer term if not permanent. No matter what the underlying theory may be, the empirical question is based on the hypothesis that people who consume digital media are at risk of increased stress levels.

The current research found that lower levels of stress were associated with higher levels of social support as measured on the questionnaire. This finding supports the main body of research into the interactions of social support and psychological well-being (e.g. Argyle, 1992; Cohen, 1992). Again, accessing the Internet from a library location was associated with increased levels of stress in the participants. Once again the possible explanations for this finding are very similar to those which have been previously stated in this chapter for the other components of psychological well-being.

Interestingly the use of the Internet for entertainment purposes is associated with higher levels of stress in the participants. This finding is consistent with the findings for anxiety which is conceptually similar to stress. It is not uncommon for stress and anxiety to be co-morbid because of their conceptual similarities. It is possible that using the Internet for entertainment is a coping strategy or distraction from life stressors. Indeed, there is evidence that television and cinematic media are used as a means of escapism for the audience (Lowery & DeFleur, 1995). It would not be unreasonable to assert that the Internet may provide a similar
opportunity to those that use it. This would offer a possible explanation for this apparent association of between anxiety and stress and using the Internet for entertainment purposes. Indeed, this would lend itself to the idea that participants with higher stress and anxiety levels use the Internet for escapism which means more use of the Internet for entertainment.

The stress component of the DASS21 scale (Lovibond & Lovibond, 1995) is comprised of a series of statements such as “I found it difficult to relax” and “I tended to over-react to situations”. It is possible that these statements offer some suggestions for the current findings. Perhaps a person who feels that they over-react in situations is likely to seek more solitary activities of which using the Internet for entertainment would be one. Indeed, the Internet can be as social or solitary as the user wants it to be. Likewise, a person who finds it hard to relax is likely to try to seek diversions and distractions to try and help. Again, uses such as entertainment could be a means of diversion from stress. Whilst it does not reduce stress levels, it may offer a temporary diversion from the cause(s) of the stress.

Rather interestingly and perhaps unsurprisingly, using the Internet for reference purposes is associated with higher levels of stress. The use of the Internet for reference purposes refers to finding information and resources for educational/knowledge acquisition purposes. Such resources are of course important to College students. Indeed the more stress due to college work pressures then the greater the need for this information. The Internet is a good source of information providing one knows how to search and perhaps has an element of luck. It can also consume hours of time for very little reward. This can be a source of frustration and
possibly stress for the user although it is unlikely to influence longer term levels of stress.

The very nature of need to use the Internet for reference is associated with work purposes which is another possible explanation for the current finding. It is possible that the work itself is the source of stress rather than the actual process and activity of using the internet for finding information. It is not possible to examine this in detail from the current data though. Previous research (e.g. Weinstein, 2002) has indicated that stress levels amongst people in an educational setting can be higher anyway so it is possible that this is a strong contributory factor in the current finding.

The integration of digital media into the lives of young people would appear to have very little influence on their levels of stress. Indeed, the few predictors there are linking digital media with stress form an understandable and meaningful pattern. Overall the pattern indicates that whilst the variables have been identified as having a negative association with stress, the use of the digital media is unlikely to be a cause for these reported levels of stress. As has been the case for the previous measures of psychological well-being, it would appear that social support is the most important element at predicting the levels of stress in the participants. Lower levels of social support would appear to be more 'harmful' than anything related to the use of digital media.

**Loneliness:** The digital media by there very nature involved communication at a distance. They are not at first sight about interaction in close physical proximity. Consequently the image of an isolated communicator, alone, and socially poorly integrated is easily formed. This may be the basis of the concerns raised about
accessing the Internet and using mobile communications. It is feared that there is a decrease in face-to-face communication linked to a need to resort to digital communications which has a detrimental effect on loneliness. Television researchers once used to describe aspects of television use as para-social interaction. This was deemed to be less wholesome than face-to-face interaction. The suggested reduced involvement and cues provided in text based communications has been linked to the possibility of an increase in the levels of loneliness experienced by individuals. However, this has been somewhat undermined by recent research.

Indeed, research by Dittmann (2004) has found that the Internet does not seem to be influencing the loneliness levels in undergraduate students. Interestingly, variables such as the amount of Internet use, the type of Internet use, history of Internet use and preference for the Internet as a mode of communication, appeared to have a minimal effect on the loneliness experienced in undergraduate students. Whilst this sample is based on 466 undergraduate students and the current research has recruited college students, collectively these studies appear to suggest that the use of digital media has little influence on those who use it. These findings are further supported by Shaw and Gant (2002) who found that increased use of the Internet was associated with decreased levels of loneliness and depression and increased social support and self esteem.

It has been shown in the current analyses that social support was again the best predictor of the levels of loneliness reported by the participants. Once again this relationship was found to be an inverse one - higher levels of social support were associated with less loneliness. This finding is consistent with the body of research into loneliness which has also found this interaction between social
support and this component of psychological well-being (e.g. Dittman, 2004; Shaw & Gant, 2002).

Interestingly, gender was a predictive variable for the levels of loneliness reported by the participants. The findings show that female participants indicated lower levels of loneliness than the male participants did. This does not mean that the male participants were lonely when compared to the female participants but it does suggest that the female participants indicated lower levels of loneliness. It may be significant than to note that both sexes had very similar usage and ownership of private e-mail address (84.8% and 82.8% respectively). The analysis of the Pew Internet Project data (e.g. Boneva et al., 2001; Howard et al., 2001) suggested that women had more positive views of using e-mail as a means of contacting others. It was also suggested that women find e-mail more gratifying to use than male users. It is possible that the current findings are influenced by these trends.

The figures were also very similar for the period of time that the participants had been using the Internet for. Mostly they had more than six months experience of using the Internet (95.6% of the males and 95.3% of the females). Furthermore, the only use for the Internet where there was a statistically significant gender difference was using the Internet for entertainment purposes. The male participants indicated that they used the Internet more in this way than the female participants did. However, using the Internet for entertainment was not a statistically significant predictor of the levels of loneliness reported by participants.

This raises questions about whether the use of digital media has an influence on increasing levels of loneliness in the participants. Certainly both genders in the sample are using the internet in a
similar way and for similar amounts of time. There is, as yet, of course no reason to believe that digital media should affect both genders in identical ways. There are many examples from research into television, for instance, where gender differences arose especially in relation to the influence of violent content. Equally, of course, other non-digital communications factors are responsible for gender differences. If it is the former then it is very difficult to identify what it is about these uses that has this influence on one group but not the other. If it is the latter then it further undermines the claims that using digital media is ‘harmful’ to psychological well-being.

Once again accessing the Internet from a library is a predictor of the levels of loneliness in the participants. It would appear that higher levels of loneliness are associated with spending more time accessing the Internet from a library. As already discussed, it seem incongruous that the use of the Internet in one location has an effect on loneliness whereas similar use of the Internet in a different location as no effect. Indeed, given that the library is probably a more social environment than, say, one’s bedroom the incongruity increases. So the reasons, as discussed earlier, have to be found elsewhere.

One of the key aspects about the Internet is e-mail because it is a fast and efficient means of communicating with people all over the world. It is not as instantaneous in practice as SMS text messaging so fulfils a role similar to written notes or letters. One key difference from the paper methods is that it is free to use and they are delivered instantly. It is this communicational use and popularity which has lead to suggestions that it increases communications and could therefore, be a positive influence on psychological well-being (e.g. Weiser, 2001).
The current research has found a negative predictive relationship between the amount of time spent e-mailing and the levels of loneliness reported by the participants. This would appear to support the notion that e-mailing is a social activity and can increase psychological well-being. This finding is also consistent with research into other communications media and which has also found that increased use is related to decreased levels of loneliness. This certainly seems to be a contradictory finding to research which has suggested that Internet use is associated with increased levels of loneliness. This finding is not just interesting in the context of Internet use. Most current mobile phones now offer the capability to e-mail from them and not just send SMS text messages. This means that the finding is relevant to mobile communications although this usage for a mobile phone is still minimal compared to SMS messaging.

Further evidence towards the positive influences that the digital communications media may provide can be seen in the negative predictive relationship between using SMS messages for conversations and loneliness. The conversational use of SMS messages is another social activity and increased use of SMS messages in this way is associated with decreased levels of loneliness. This would suggest that this new digital media is being incorporated into the lives of young people and that rather than having a harmful effect on the user, there are some uses that promote increased psychological well-being. These claims are only tentative though because there are a great many variables which did not show any relationship. Whilst this does not indicate negative influences of digital media, it does not indicate positive influences either.
In a contradiction of the finding for using SMS messages for conversation, the findings suggest that receiving formal information via SMS is associated with increased loneliness. This kind of communication is different to communications with friends or family. It is unlikely to contain the same emotional context as receiving a message from a friend. Opening a letter from the council is unlikely to bring the same potential pleasure as opening a letter from a friend. Whilst letters and SMS messages are not directly comparable in their characteristics, the analogy illustrates the point that formal information does not generally carry the same positive connotations as other types of communications.

Perhaps the most interesting and apparent finding from the current research is that the digital media variables do not appear to have much influence over the psychological well-being components. Very few variables out of an extensive list indicated any predictive relationship with psychological well-being. It has to be noted that this refers to both positive and negative relationships. Based on the current findings, this would suggest that concerns and claims about the negative impact of digital media are unfounded and perhaps even alarmist. Likewise it would appear that the claims regarding the positive psychological impacts of digital media use have exaggerated this potential influence. This does not mean that these media should be avoided or are in any way bad. It just suggests that the integration of this new technology into the lives of adolescents in general does not improve or retard psychological well-being in a tangible way.

If this seems a sweeping claim, then there are a number of qualifications which should be considered. First of all there are some digital communications variables which potentially appear to
indicate the possibility of adverse Internet influences. The most prevalent of these was accessing the Internet from a library which was a predictor variable for all the components of psychological well-being. However, this is a good example of where, taking into account the total pattern of relationships and non-relationships, it is better to explain the findings in terms which do not suggest a causal effect of library location on psychological well-being. It is important to the extent that it raises questions about the processes by which the trend occurs. To regard it simply as a cause-and-effect is to neglect the possibility that the finding can stimulate theorising and hypothesising.

The most common feature of the few predictors of poorer psychological well-being was they tended not to be non-communicational or interactional in nature. For the few variables which were associated with increased levels of psychological well-being a key feature was that they were communicational and interactional in nature. This would suggest that whilst overall very few of the digital media variables predicted levels of psychological well-being, the social uses appeared to be associated with better well-being whereas less social uses were associated with lower well-being. Ofosu (2001) suggested that increased levels of loneliness were associated with higher levels of Internet dependency in their sample. Interestingly though, these participants indicated higher levels of social support from their online friends.

The most prevalent positive influence to be shown was for social support which predicted increased levels of psychological well-being. This adds some weight to the suggestions that the use of digital communications media has very little influence on psychological well-being. Social support would appear to be a far greater influence on psychological well-being and this relationship is
supported by a notable body of research (e.g. Dittman 2004; Weiser, 2001). Certain uses for the digital media were associated with increased psychological well-being with the most notable being the relationship between e-mail and loneliness. This contradicts the findings of Dittman (2004) who found that none of the internet related variables in their research associated with the levels of loneliness reported by the participants.

Conclusions

The one thing that the current research cannot claim is any causality between the digital media variables and psychological well-being. It is likely that there are a large range of contributory factors to the levels of psychological well-being which extend far beyond the use of digital media. It is certainly not possible to identify whether the use of digital media precedes changes in psychological well-being or the levels of psychological well-being influences the use of digital media.

General issues

What general issues are raised by this thesis beyond the detail of the findings? Overall the research has achieved the task which it was designed to do efficiently and effectively though always leaving more to be known. The strength of the quantitative questionnaire-based method is that it allows for a large sample to be recruited from the target population and is speedy and relatively straightforward to complete. Partly because of this, it was possible to sample from multiple locations in two regions of England. This made the sampling somewhat more representative though in no sense did this meet the requirements of a representative sample. It simply was not possible to randomly sample locations which this
would require. A greater variety of locations would obviously be advantageous but this was not possible because of constraints of time, resources and money. The current sample of 443 participants would seem sufficient on which to base the claims made in this chapter.

Given that the research area involves the Internet, this begs one to consider the possibility of collecting data online. Perhaps both hard copies and online versions of the questionnaires could be employed. Despite the positive recommendations made for Internet data collection (e.g. examples of authors advocating Internet data collection), the experience of this during the course of the preliminary and pilot research for this thesis would not appear to be too reassuring. However, there are lessons to be learnt from these somewhat unsuccessful attempts which might improve data collection in this way.

Some of the recommendations which emerge out of the work for this thesis include:

1: A webpage based questionnaire is recommended supplemented by more traditional pen and paper approaches which would enhance the sampling by including a wider variety of participants. Not everyone is an Internet user after all.

2: The research would be greatly enhanced if there were follow-up data so as to create a longitudinal research. It would also be important to include a longitudinal study in any future research. The current research only gives a snapshot of digital media use and psychological well-being. A longitudinal element was included in the current research but participant apathy for the repeated measure meant that this had to be abandoned. It is important to note that
the longitudinal sample was only very small scale and was not the main focus of the current research.

An effective longitudinal element to future research in this area would add greatly to the chances of clarity of findings. Much of the discussion of the present findings is hampered by the issue of causality. By including a longitudinal element, more could be said about causality. Changes in levels of the psychological well-being variables could be mapped against changes in Internet use over time. Also, it is possible that any influence of digital media would become stronger because of the cumulation of change with longer-term use. The majority of the current sample indicated that they had been accessing the Internet for over 6 months. However, it would be important to examine the relationships between digital media use and psychological well-being after a greater period of use. Equally important would be to examine how usage patterns change over time and with changes in lifestyle – e.g. progression to college to work or university. Would digital media become more integrated into the lives of young people and would their role change?

3: The strategy for constructing the present research materials was that of collecting data broadly to span the range of digital media uses. This broad strategy is different from that of previous research which has focused relatively narrowly. One of the strengths of the current research is its incorporation of measures of a wider variety of digital media uses. Nevertheless, it is now known that some aspects were overlooked. So participants identified certain uses as popular though these were not included on the questionnaire. The use of MSN Messenger was the most commonly mentioned application on the Internet which was not included as such in the
research materials. Consequently any future research should specifically incorporate this.

MSN Messenger is a real time messaging system which allows one to 'chat' with friends online. It is similar to chatrooms in principle although the 'chat' can only be seen by the parties involved in it. When a user logs on to the Internet the messenger system will tell inform them whether any of their listed contacts (who also have the program on their computer) are also online. It will also tell the listed contacts that are now online. If one chooses to contact a friend online then the message will pop up on their screen and they can click on it and respond immediately. Each message will appear onscreen as soon as it has been written so each party can see instantly see what has been written. Recent developments of the system allow for the use of webcams working in tandem with the text based communication.

4: The use of groups such as those offered by 'yahoo' and 'MSN' might also be included by name in future research. These groups are generally based around a specific topic or person. They consist of message boards where users can post messages to the group and communicate with the other members. They usually offer other features such as pictures, links and polls. The current research has focussed more directly onto chatrooms because of their open nature and instant communications with a range of people. It would appear that perhaps too much emphasis has been put onto this type of communications use and insufficient emphasis has been put on these other means.

5: Missing components of digital media use in the current research are related to mobile communications. The development of MMS (multimedia messaging) and 3G (3rd Generation) mobile
communications has only occurred during the running of the current research. MMS refers to the ability to take, send and receive colour photographs from a compatible phone or the Internet. 3G mobile phones refer to the 3rd generation of mobile phones which now offer ever-improving video messaging and calls. It has to be noted that very few mobile phone networks and manufacturers have currently introduced 3G but all of the major companies are in the process of implementing it.

The design of the measure predates the widespread introduction of these new mobile phone uses which explains their omission. This reflects how quickly technology in this field progresses. It remains to be seen how effective this technology will be and how quickly it will be integrated into everyday life. The provision of sound and video raises interesting questions with regard to the apparent lack of cues offered by the digital media when compared to face to face communication. The phone use will be able to see and hear the person to whom they are talking.

6: Any future research should include measures how not only the use of the digital media but the extent to which an individual's use of such media involves reciprocal communications. That is to say, it may be a naïve assumption to assume that the number of text messages, say, sent by an individual reflects their integration into a communications community. The number of messages received may be different from the numbers sent. It could be that the receipt of communications is psychologically more satisfying than the sending. Indeed it could be that the ideal is when the numbers sent and the numbers received equate. Obviously, it would be important to separate impersonal unsolicited e-mails (SPAM) received from the genuine e-mails received. The current research has identified that increased use of e-mail and sending more SMS messages are
associated with increased well-being for loneliness and anxiety respectively. The current research has not investigated the number of messages received by the participants which means that it is difficult to infer direct influences from an increased quantity of messages sent.

It is likely that the amount of messages sent and received influence each other and the associations with psychological well-being. It would be helpful to examine whether increased numbers of messages received is associated with any components of psychological well-being. A person who sends a large quantity of messages but receives very few messages is likely to be more at risk of negative psychological well-being than someone who sends and receives many messages. Any future research must incorporate this into the design.

7: The measure of social support constructed for the questionnaire has indicated that this factor is important in the psychological well-being of the participants. The measure would appear to show that frequency with which people turn to a social network of contacts does have an influence on well-being. This measure could be refined further to incorporate a more direct measure of social support with the network based measure.

Conclusions

The current research has made several important findings regarding the use of digital media and psychological well-being. However, perhaps the most striking outcome in the research is the lack of relationships between psychological well-being and the majority of aspects of digital media use. Thus implying that it is possible that whilst new digital technology is being incorporated into the lives of
young people almost seamlessly. The emphasis on the psychological effects of these aspects of digital communications would seem to be somewhat overstated in the past. However, one must remember that the psychological states studied in the present research are largely enduring characteristics rather than fluctuations in mood such as happiness. Probably the clearest effects of digital communication are likely to occur in terms of fairly transitory mood states. By this is meant the good feelings induced when a friend gets in touch or the annoyance when one is contacted too much. Just how these transitory mood states would lead to more long-term feelings is not known. It is also significant that the present research is about communications (frequencies and the like) and not about the contents of the communications. Perhaps this is one reason why the relationships of digital media use and psychological well-being are not generally strong. It may be why social support (which in a sense reflects particular communication contents) is consistently rather important in the present findings.

It is possible that any harmful influences involved with the Internet lie beyond the act of using the Internet. It is possible that the greatest influence may lie within the malicious use on the Internet by others. Criminal activity via the Internet such as identity theft and fraud are perhaps more of a threat to well-being than using the Internet itself. The distribution of computer viruses is another key malicious use for the Internet which puts the user at ‘risk’. The first mobile phone virus was recently reported illustrating that this threat exists on the phones as well. These criminal uses for digital media are comparable to threats which exist in the face to face world. Indeed, it might possibly be that the most dangerous thing about the use of digital media to personal and psychological well-being is the ‘new’ trends of theft and personal crime associated with them.
Appendix 1: University Questionnaire

Thank you for taking part in this research. My name is Ben Oldfield and I am a second year Ph.D. student in the Social Sciences department. This questionnaire investigates patterns of mobile phone and Internet use. All responses will be confidential and you will not be identifiable in any analysis that is carried out. I am requesting your name and e-mail address because this research incorporates a follow up in a year’s time. This will be in the same format of the current questionnaire. You are welcome to withdraw from this research at any time and request that your data be removed.

Please read the questions carefully and tick the box that corresponds best to you. Do not spend too much time thinking about the responses you give.

Name:

E-mail:

1. Are you male or female?
   Male □
   Female □

2. What is your age?

3. What course are you doing?

4. Have you ever used the Internet?
   Yes □
   No □ Please go to Question 14

5. Did you use the Internet prior to coming to university?
   Yes □
   No □ Please go to Question 9

6. How long prior to coming to university had you used the Internet?
   0-5 months □
   6 months-1 year □
   Over 1 year □
7. Please rate how much you used the following resources on the Internet prior to coming to university.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entertainment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatrooms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td></td>
<td></td>
<td>Please specify........................................</td>
</tr>
</tbody>
</table>

8. Where did you use the Internet prior to coming to university?

<table>
<thead>
<tr>
<th>Location</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home</td>
<td>☐</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet café</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile phone</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td></td>
<td></td>
<td>Please specify........................................</td>
</tr>
</tbody>
</table>
9. How long do you use the Internet for each of these reasons?

Please indicate on the scale the average hours spent using Internet for each item per week.

<table>
<thead>
<tr>
<th>Item</th>
<th>Never</th>
<th>0-1</th>
<th>1-3</th>
<th>3-5</th>
<th>5+</th>
</tr>
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<tbody>
<tr>
<td>Shopping</td>
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<td></td>
</tr>
<tr>
<td>Entertainment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chatrooms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Banking</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reference</td>
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</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. For what purpose(s) do you use chatrooms?

Please tick the level for each item that is most suitable.

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Never</th>
<th>Once a month</th>
<th>Once a week</th>
<th>Everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>To meet people</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To chat to ‘online’ friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To chat to ‘offline’ friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participating in discussions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Express opinion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pass time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. How do you rate friendships made ‘online’ compared to ‘offline’?

*Please indicate whether the following characteristics are stronger, weaker or the same in offline friendships*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Stronger</th>
<th>The same</th>
<th>Weaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Support</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Control</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Honesty</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Openness</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Affection</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Understanding</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Closeness</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

12. Where have you used the Internet since starting university?

*Please tick the level for each item that is most suitable.*

<table>
<thead>
<tr>
<th>Location</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>On campus</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Term-time residence</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Permanent residence</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Library</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Internet café</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Mobile phone</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Other</td>
<td>□</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
13. How skilled/knowledgeable do you perceive yourself to be with the Internet?
   Extremely □
   Somewhat □
   Not at all □

14. Do you have a mobile phone?
   Yes □
   No □ Please go to Question 18

15. Is your mobile always switched on?
   Yes □
   No □

16. How do you send text messages?
   Please tick as many as applicable
   Internet SMS service □
   Mobile phone □
   Other □ Please specify.................................

17. How many text messages do you send per day?
   0 □
   1-5 □
   6-10 □
   11-20 □
   More than 20 □
18. What do you use text messages for?

*Please tick the box that most closely describes yourself.*

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversation</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Prior to other form of communication</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Substitute for other communication</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Seeking advice/information (friends)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Just to make contact</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Pass on joke messages</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Receiving information (formal)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Making social arrangements</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

*Please specify...*

19. How often do you use the following to contact friends?

*Please tick the box that most closely describes yourself.*

<table>
<thead>
<tr>
<th>Method</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone calls</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Letter writing</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Text messaging</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Emails</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Speaking in person</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Internet chatrooms</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

*Please specify...*
20. Who do you turn to for help when you have a problem?

**Emotional**

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Siblings</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Partner/spouse</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Teachers</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Clergy</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Counsellors</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Offline friends</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Online friends</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Other</td>
<td>□</td>
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<td>□</td>
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</tr>
</tbody>
</table>

*Please specify* .................................................................

**Relationship**

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Siblings</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Partner/spouse</td>
<td>□</td>
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<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Teachers</td>
<td>□</td>
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<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Clergy</td>
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<td>□</td>
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<tr>
<td>Counsellors</td>
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<td>□</td>
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<td>Offline friends</td>
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<td>□</td>
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<td>□</td>
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<tr>
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<td>Other</td>
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</table>

*Please specify* ........................................................................

262
<table>
<thead>
<tr>
<th>Work-related</th>
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<th>Sometimes</th>
<th>Frequently</th>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Siblings</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Partner/spouse</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Teachers</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tr>
<tr>
<td>Clergy</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tr>
<tr>
<td>Counsellors</td>
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<td>☐</td>
<td>☐</td>
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</tr>
<tr>
<td>Offline friends</td>
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<td>☐</td>
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</tr>
<tr>
<td>Online friends</td>
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<td>☐</td>
<td>☐</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Siblings</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Partner/spouse</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Teachers</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Clergy</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Counsellors</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Offline friends</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Online friends</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Please specify</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
21. How do you establish contact with them when seeking advice?

*Please tick the level for each item that is most suitable.*

<table>
<thead>
<tr>
<th>Method</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone calls</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Letter writing</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Text messaging</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Emails</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Speaking in person</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Internet chatrooms</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Please specify: ..............................................

22. Are these alternative forms of communication (e.g. e-mail, text messages and Internet chatrooms) substitutes for face-to-face interaction?

Yes ☐  *Please indicate why.* ..................................................

No ☐  *Please indicate why.* ..................................................

Please state how applicable the following statements are to you.

23. I have many friends at home.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

24. I have many friends at university.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

25. I see my friends regularly.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
26. I prefer being on the Internet rather than being out with my friends

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

27. My friends are always there if I need them.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

(DASS21)

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:
0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of the time
3 Applied to me very much, or most of the time

29. I found it hard to wind down
0 1 2 3

30. I was aware of dryness of my mouth
0 1 2 3

31. I couldn't seem to experience any positive feeling at all
0 1 2 3

32. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)
0 1 2 3

33. I found it difficult to work up the initiative to do things
0 1 2 3

34. I tended to over-react to situations
0 1 2 3

35. I experienced trembling (eg, in the hands)
0 1 2 3

36. I felt that I was using a lot of nervous energy
0 1 2 3

37. I was worried about situations in which I might panic and make a fool of myself
0 1 2 3

38. I felt that I had nothing to look forward to
0 1 2 3

39. I found myself getting agitated
0 1 2 3

40. I found it difficult to relax
0 1 2 3

41. I felt down-hearted and blue
0 1 2 3
42. I was intolerant of anything that kept me from getting on with what I was doing 0 1 2 3
43. I felt I was close to panic 0 1 2 3
44. I was unable to become enthusiastic about anything 0 1 2 3
45. I felt I wasn't worth much as a person 0 1 2 3
46. I felt that I was rather touchy 0 1 2 3
47. I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat) 0 1 2 3
48. I felt scared without any good reason 0 1 2 3
49. I felt that life was meaningless 0 1 2 3

-----

50. I feel in tune with the people around me 0 1 2 3
51. I lack companionship 0 1 2 3
52. There is no one I can turn to 0 1 2 3
53. I do not feel alone 0 1 2 3
54. I feel a part of a group of friends 0 1 2 3
55. I have a lot in common with the people around me 0 1 2 3
56. I am no longer close to anyone 0 1 2 3
57. My interests and ideas are not shared by those around me 0 1 2 3
58. I am an outgoing person 0 1 2 3
59. There are people I feel close to 0 1 2 3
60. I feel left out 0 1 2 3
61. My social relationships are superficial 0 1 2 3
62. No one really knows me well 0 1 2 3
63. I feel isolated from others 0 1 2 3
64. I can find companionship when I want it 0 1 2 3
65. There are people who really understand me 0 1 2 3
66. I am unhappy being so withdrawn 0 1 2 3
67. People are around me but not with me 0 1 2 3
68. There are people I can talk to 0 1 2 3
69. There are people I can turn to 0 1 2 3

266
Appendix 2: College Questionnaire

Thank you for taking part in this research. My name is Ben Oldfield and I am a second year Ph.D. student in the Social Sciences Department at Loughborough University. This questionnaire investigates patterns of mobile phone and Internet use. All responses will be confidential and you will not be identifiable in any analysis that is carried out. I am requesting your name and e-mail address for administration purposes only. It is completely optional and you may leave this blank. You are welcome to withdraw from this research at any time and request that your data be removed.

Please read the questions carefully and tick the box that corresponds best to you. Do not spend too much time thinking about the responses you give.

*Name:

*E-mail:

*Optional

1. Are you male or female?
   - Male
   - Female

2. What is your age?

3. Have you ever used the Internet?
   - Yes
   - No Please go to Question 16

4. Do you use the Internet at college?
   - Yes
   - No

5. Does the College offer general access to the Internet?
   - Yes
   - No

6. Do you have access to the Internet at home?
   - Yes
   - No
7. Do you have a private e-mail address?
   Yes □
   No □

8. Do your parents pay for the Internet access?
   Yes □
   No □

9. Are there any restrictions on your Internet access at College?
   Yes □
   No □

10. Are there any restrictions on your Internet access at home?
    Yes □
    No □

11. How long have you used the Internet?
    0-6 months □
    6 months-1 year □
    Over 1 year □

12. Please rate how much you used the following resources on the Internet

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Entertainment</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Chatrooms</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Email</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Banking</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Education</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Other</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

Please specify........................................
13. Where do you use the Internet?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>College</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Home</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Library</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Internet café</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Mobile phone</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Please specify.................................

14. How long do you use the Internet for each of these reasons?

Please indicate on the scale the average hours spent using Internet for each item per week.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>0-1</th>
<th>1-3</th>
<th>3-5</th>
<th>5+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Entertainment</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Chatrooms</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Email</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Banking</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Education</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Reference</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Please specify.................................
15. For what purpose(s) do you use chatrooms?

*Please tick the level for each item that is most suitable.*

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Never</th>
<th>Once a month</th>
<th>Once a week</th>
<th>Everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>To meet people</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>To chat to ‘online’ friends</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>To chat to ‘offline’ friends</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Participating in discussions</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Express opinion</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Pass time</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. Irrespective of whether you use chatrooms, how do you rate friendships made ‘online’ compared to ‘offline’?

*Please indicate whether the following characteristics are stronger, weaker or the same in offline friendships*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Stronger</th>
<th>The same</th>
<th>Weaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Support</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Control</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Honesty</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Openness</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Affection</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Understanding</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Closeness</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
17. How skilled/knowledgeable do you perceive yourself to be with the Internet?

Extremely □

Somewhat □

Not at all □

18. Do you have a mobile phone?

Yes □

No □ Please go to Question 23

19. Is your mobile always switched on?

Yes □

No □

20. Are you on a contract for your mobile phone?

Yes □

No □

21. Do your parents pay the bills for your mobile?

Yes □

No □

22. How do you send text messages?

Please tick as many as applicable

Internet SMS service □

Mobile phone □

Other □ Please specify..........................
23. How many text messages do you send per day?

<table>
<thead>
<tr>
<th></th>
<th>□</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td></td>
</tr>
<tr>
<td>11-20</td>
<td></td>
</tr>
<tr>
<td>More than 20</td>
<td>□</td>
</tr>
</tbody>
</table>

24. What do you use text messages for?

*Please tick the box that most closely describes yourself.*

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversation</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Prior to other form of communication</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Substitute for other communication</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Seeking advice/information (friends)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Just to make contact</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Pass on joke messages</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Receiving information (formal)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Making social arrangements</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Other</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

*Please specify*
25. How often do you use the following to contact friends?

*Please tick the box that most closely describes yourself.*

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone calls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Letter writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text messaging</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emails</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaking in person</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet chatrooms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td>Please specify</td>
</tr>
</tbody>
</table>

26. Who do you turn to for help when you have a problem?

*Emotional*

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siblings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boyfriend/Girlfriend</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clergy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counsellors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offline friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td>Please specify</td>
</tr>
</tbody>
</table>

Please specify.
<table>
<thead>
<tr>
<th>Relationship</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
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*Please specify*...

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27. How do you establish contact with them when seeking advice?

*Please tick the level for each item that is most suitable.*

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</table>

*Please specify*...
28. Are these alternative forms of communication (e.g. e-mail, text messages and Internet chatrooms) substitutes for face-to-face interaction?

Yes  □  Please indicate why .................................................................
..............................................................................................................................

No  □  Please indicate why .................................................................
..............................................................................................................................

Please state how applicable the following statements are to you.

29. I have many friends at home.

Strongly disagree  Disagree  Agree  Strongly agree

□  □  □  □

30. I have many friends at College.

Strongly disagree  Disagree  Agree  Strongly agree

□  □  □  □

31. I see my friends regularly.

Strongly disagree  Disagree  Agree  Strongly agree

□  □  □  □

32. I prefer being on the Internet rather than being out with my friends

Strongly disagree  Disagree  Agree  Strongly agree

□  □  □  □

33. My friends are always there if I need them.

Strongly disagree  Disagree  Agree  Strongly agree

□  □  □  □
34. I always ‘surf’ alone.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
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(DASS21)

Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of time
3 Applied to me very much, or most of the time

35. I found it hard to wind down
36. I was aware of dryness of my mouth
37. I couldn't seem to experience any positive feeling at all
38. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)
39. I found it difficult to work up the initiative to do things
40. I tended to over-react to situations
41. I experienced trembling (eg, in the hands)
42. I felt that I was using a lot of nervous energy
43. I was worried about situations in which I might panic and make a fool of myself
44. I felt that I had nothing to look forward to
45. I found myself getting agitated
46. I found it difficult to relax
47. I felt down-hearted and blue
48. I was intolerant of anything that kept me from getting on with what I was doing
49. I felt I was close to panic
50. I was unable to become enthusiastic about anything
51. I felt I wasn't worth much as a person
52. I felt that I was rather touchy
53. I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat) 0 1 2 3
54. I felt scared without any good reason 0 1 2 3
55. I felt that life was meaningless 0 1 2 3

56. I feel in tune with the people around me 0 1 2 3
57. I lack companionship 0 1 2 3
58. There is no one I can turn to 0 1 2 3
59. I do not feel alone 0 1 2 3
60. I feel a part of a group of friends 0 1 2 3
61. I have a lot in common with the people around me 0 1 2 3
62. I am no longer close to anyone 0 1 2 3
63. My interests and ideas are not shared by those around me 0 1 2 3
64. I am an outgoing person 0 1 2 3
65. There are people I feel close to 0 1 2 3
66. I feel left out 0 1 2 3
67. My social relationships are superficial 0 1 2 3
68. No one really knows me well 0 1 2 3
69. I feel isolated from others 0 1 2 3
70. I can find companionship when I want it 0 1 2 3
71. There are people who really understand me 0 1 2 3
72. I am unhappy being so withdrawn 0 1 2 3
73. People are around me but not with me 0 1 2 3
74. There are people I can talk to 0 1 2 3
75. There are people I can turn to 0 1 2 3

Thank you for taking part in my research. If you have any questions please contact me. My e-mail is b.r.oldfield@lboro.ac.uk and I will address any queries you may have.
Appendix 3: Factor Loading Tables for the Social Support Networks Scale

### Relationship Issues Support

<table>
<thead>
<tr>
<th>Item</th>
<th>Component 1</th>
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### College Work-Related Issues Support

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National Statistics Office$^3$


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Violence and television.


Weboptimiser


